Combined Author Index

Aaronson, H.I. 427-440A, 1807-1818A
Abel Engh, T. 83-94B
Abell, G.C. 177-183A
Adams, B.L. 1179-1185A, 2611A
Adler, P.H. 2705-2711A
Ågren, J. 409-416A
Ahmadzai, H. 303-310B
Ai, D.K. 571-579B
Alam, M. 613-616B
Alavi, A. 543-548A
Altstetter, C.J. 651-656A, 1187-1192A, 145-152A
Amemiya, Y. 1973-1980A
Anand, S. 331-334B
Andersson, J.-O. 627-636A, 1385-1394A
Ando, S. 47-52B
Andresen, P.L. 495-504A
Andrews, J.B. 2665-2669A, 2645-2650A
Anewalt, M.R. 3045-3055A
Angers, L.M. 1645-1656A
Annavarapu, S. 3077-3086A
Antolovich, S.D. 1277-1293A, 93-103A
Anyalebechi, P.N. 227-232B
Aoki, M. 53-58B
Apelian, D. 3077-3086A, 213-226B
Argyropoulos, S.A. 859-870B
Armstrong, J.H. 473-478A
Arrott, A.P. 2631-2637A
Asahi, H. 2171-2177A
Asaki, Z. 47-52B
Asaro, R.J. 2179-2206A
Aust, K.T. 1345-1349A, 1667-1675A
Austin, L.K. 617-625A
Awakura, Y. 505-507B, 355-363B, 347-354B, 5-12B, 53-58B
Ayer, R. 1645-1656A

Bae, J.C. 2399-2405A
Baek, K.-K. 1721-1726A
Baer, D.R. 2605-2011A
Ballon, J.-P. 2575-2587A
Baker, C.L. 73-82A
Baldo, P.M. 2567-2573A
Baldock, B.R. 375-382B
Ban-Ya, S. 233-242B
Banerjee, S. 453-465A
Banerji, K. 961-971A
Barbieri, F. 2659-2664A, 2695-2703A
Barsch, G.R. 761-775A
Barsoum, M.W. 637-644A
Bartusiak, R.D. 563-570B
Basavaiah, M. 2153-2161A
Baxter, W.J. 2457-2465A, 83-91A
Beatty, J.H. 1617-1620A, 973-986A
Bellows, R.S. 479-486A
Beltcn, G.R. 959-965B
Benci, J.E. 837-845A
Bendersky, L.A. 2893-2900A, 1101-1107A
Berger, S.A. 571-579B
Bergman, R.A. 181-186B
Bernstein, I.M. 2819-2829A, 73-82A, 301-308A
Betrabet, H.S. 1437-1443A
Bhadeshia, H.K.D.H. 669-674A, 1597-1602A
Bhargava, S. 1205-1211A
Bhat, M.S. 1751-1760A
Bhattacharya, R.S. 1372-1374A
Biancaniello, F.S. 2893-2900A
Bianchaniello, F.S. 1101-1107A
Biber, H.E. 1603-1608A, 1609-1616A
Biner, S.B. 829-835A
Bizen, Y. 383-385A
Blank, E. 987-998A
Bobeck, G.E. 2733-2739A
Boettinger, W.J. 1101-1107A
Bok, K.A. 1125-1127A
Bondaryev, E.N. 2407-2413A
Borofka, J.C. 1841-1847A
Bose, A. 487-494A, 3100-3103A, 1905-1913A, 2467-2476A
Bose, D.K. 669-675B
Bourell, D.L. 2041-2048A, 1634-1638A
Bowman, R. 93-103A
Boyd, J.D. 1221-1234A
Boysan, F. 755-764B
Bradley, J.R. 2013-2025A
Brakman, C.M. 925-932A, 2415-2426A
Brannen, J.M. 187-199B
Brewer, L. 893-917B
Briant, C.L. 137-143A, 2091-2098A, 2099-2108A, 495-504A
Brimacombe, J.K. 277-287B, 289-301B
Brooks, C.R. 941-952A
Bros, J.P. 409-416A, 2075-2089A
Brown, C.C. 1425-1427A
Brown, L.C. 2921-2929A
Budka, P.Z. 1919-1923A
Bui, R.T. 171-180B
Burns, R.J. 1931-1937A
Burns, W. 477-482B
Buxbaum, R.E. 1425-1427A
Byrne, J.G. 1371-1372A

Cabrera, A.L. 3045-3055A
Calderon, H.A. 1135-1146A
Calvo, F.A. 165-170B
Caram, H.S. 563-570B
Carlson, O.N. 1429-1435A
Carpenter, S.H. 473-478A
Carr, M.J. 3063-3069A, 657-667A
Cassagne, T.B. 281-292A
Castillo, R. 2049-2066A
Caulfield, T. 1841-1847A
Chai, A.-T. 1895-1898A
Chan, A.H. 334-336B
Chan, K.S. 2477-2486A
Chandler, H.D. 2975-2978A
Chang, J.W. 1569-1573A
Chang, Y.A. 441-446A
Chao, C.G. 1213-1219A
Charlot, L.A. 2005-2011A
Chastell, D.J. 1445-1460A
Chaubal, P.C. 547-556B
Chaudhury, P.K. 2741-2752A
Chen, D. 409-418B, 617-622B
Chen, F.-R. 2359-2363A
Chen, T.-K. 1727-1737A
Chen, T.T. 803-817B
Chen, X.-F. 1319-1334A
Chene, J. 73-82A
Cheng, C.C. 2567-2573A
Cheng, L. 925-932A, 2415-2426A
Chhabra, R.P. 273-279A
Chilton, J.P. 709-717B
Cho, K. 2027-2040A
Chokshi, A.H. 1621-1624A, 2487-2496A
Chopra, M.A. 3087-3096A
Chou, K.-C. 373-376A
Chou, T.-W. 129-135A
Chou, Y.T. 1305-1309A
Chu, C.W. 2639-2643A
Chu, W.-Y. 1335-1343A, 1067-1073A
Chung, K. 293-300A
Chung, Y.W. 337-344A
Cieslak, M.J. 2319-2331A, 3063-3069A, 35-50A, 657-667A, 319-329B
Cima, M. 893-917B
Clapp, P.C. 783-787A, 1761-1766A
Clothier, G.W. 732-733A
Clough, R.B. 493-503B
Collier, J.P. 1657-1666A, 1657-1666A
Collins, L.E. 1221-1234A
Collins, T.H. 329-335A
Collur, M.M. 967-972B
Cooke, A.V. 709-717B
Copley, S.M. 2133-2138A
Cornie, J.A. 709-721A
Cortie, M.B. 2979-2987A
Couper, M.J. 1027-1035A
Couque, H. 2179-2206A
Courtney, T.H. 517-526A
Covino, B.S., Jr. 2163-2170A
Crall, L.A. 329-335A
Curreri, P. 1899-1904A
Curreri, P.A. 2665-2669A, 2671-2676A, 2839-2846A, 2645-2650A

Daeubler, M.A. 301-308A
Danley, T.J. 2619-2623A
Dantzig, J.A. 2589-2602A
Dariel, M.P. 909-913A
Das, R.P. 331-334B
Das, S. 1365-1367A
Das, S.C. 823-830B, 331-334B
Davenport, W.G. 427-432B
Davis, R.M. 2867-2874A
Dayan, D. 909-913A
de Fontaine, D. 169-175A
Debroy, T. 483-491B, 613-616B, 851-858B, 967-972B
deGroh, H.C., III 2651-2658A
Delaey, L. 207-216A
Desmond, J. 159-167A
Dewandre, T. 1925-1929A
Dey, D.N. 514-518B
Dhindaw, B.K. 2839-2846A, 2847-2855A, 1899-1904A
Dickson, J.I. 2575-2587A
Dimopulos, V. 873-880A
Dixon, G. 1127-1128A
Dogan, B. 505-516A, 1221-1234A
Doi, T. 5-12B
Doig, P. 1445-1460A
Dollar, M. 675-686A
Dolling, G. 2207-2214A
Domingo, S. 2937-2944A, 933-940A
Donepudi, V.S. 3071-3075A
Dong, Y. 409-418B
Dorward, R.C. 1631-1634A
Dube, R.K. 1205-1211A
Dubke, M. 581-593B, 595-602B
Duffy, J. 2179-2206A
Dupré, B. 311-317B
Duquette, D.J. 1775-1783A
Dutkiewicz, J. 1853-1860A
Dutrizac, J.E. 803-817B, 187-199B

Edwards, G.R. 95-101B
Ehrlich, F.R. 329-335A
Ekimoto, T. 235-242A
El-Kaddah, N. 765-775B, 831-837B
El Moujahid, S. 787-802B
El-Naggar, M.M.A. 663-668B
Eliezer, D. 723-730A
Elliott, J.F. 899-908A, 935-941B
Engh, T.A. 745-754B
Enomoto, M. 427-440A, 1807-1818A
Espiell, F. 541-546B
Espinola, A. 663-668B
Essadiqi, E. 417-426A
Et-Tabirou, M. 311-317B
Evans, J.W. 397-408B

Farooq, S. 1905-1913A
Farouk, B. 213-226B
Faucher, B. 505-516A
Fernando, L.A. 1083-1100A
Ferro, A.C. 1147-1151A
Fine, M.E. 1135-1146A, 337-344A, 1051-1059A
Finlayson, T.R. 185-191A, 193-198A, 199-205A
Finn, C.W.P. 677-684B
Fischmeister, H.F. 1395-1401A
Flanagan, W.F. 281-292A, 2067-2074A
Fleming, H.G. 2805-2817A
Flemings, M.C. 1109-1119A, 709-721A
Flewitt, P.E.J. 1445-1460A
Flinn, J.E. 2399-2405A
Fong, C. 2753-2764A, 2765-2773A
Ford, R.D. 255-259B
Fortes, M.A. 1147-1151A
Franck, R.E. 2363-2366A
Frank, F.C. 403-408A
Fras, E. 1367-1369A, 1235-1241A
Fray, D.J. 709-717B
Fricke, W.G., Jr. 731-732A
Froes, F.H. 23-33A, 1372-1374A
Frohlich, S. 2215-2224A
Fruehan, R.J. 261-268B, 419-425B, 334-336B, 643-648B
Fuerschbach, P.W. 319-329B
Fujita, F.E. 2723-2731A, 2931-2936A, 803-810A
Fukaya, K. 1269-1275A
Funk, W. 987-998A

Gambino, M. 409-416A
Gao, M. 1739-1750A
García-Zayas, J. 541-546B
Garrett, G.G. 2979-2987A
Garrison, W.M., Jr. 3103-3107A, 2989-3003A, 1751-1760A
Gaskell, D.R. 623-626B
Gaune-Escard, M. 409-416A, 2075-2089A
Génin, J.-M.R. 2901-2909A
George, E.P. 887-892A
Gerberich, W.W. 1319-1334A
German, R.M. 487-494A, 1523-1532A, 3100-3103A, 1905-1913A, 2467-2476A
Ghosh, A. 839-850B, 885-892B
Gleitzer, C. 311-317B
Glicksman, M.E. 1945-1953A, 3087-3096A
Godavarti, P.S. 1243-1255A
Gogia, S.K. 823-830B
Gokhale, A.M. 2123-2131A, 2153-2161A
Gomez de Salazar, J.M. 165-170B
Gondi, P. 2695-2703A
Gonfalone, A. 1925-1929A
Granger, D.A. 227-232B
Graydon, J.W. 777-785B, 919-925B, 141-146B
Green, S.M. 734-738A, 738-743A
Greenberg, P.S. 1895-1898A
Grimsey, E.J. 243-247B
Grugel, R.N. 2677-2680A
Grummon, D.S. 2775-2788A
Guiliamany, J.M. 165-170B
Gungor, M.N. 2215-2224A
Gupta, C.K. 669-675B
Gurland, J. 2027-2040A
Gustafson, P. 2531-2546A, 2547-2554A
Guthrie, R.I.L. 507-511B
Guzik, E. 1235-1241A
Guzowski, M.M. 385-387A

Hack, G.A.J. 723A
Hagni, R.D. 719-729B
Hahn, G.T. 2067-2074A
Hahn, R.C. 1945-1953A
Hahn, Y.B. 871-884B
Hajra, J.P. 649-654B
Hamano, R. 1461-1469A
Hammarlund, G.R. 2619-2623A
Han, Q. 409-418B, 617-622B
Handerhan, K.J. 2989-3003A
Hansen, G.P. 1889-1894A, 1939-1943A
Hardy, D.J. 187-199B
Hardy, S.C. 2713-2721A
Harriprashad, B. 517-526A
Harvey, D.P., II 1547-1553A
Hashimoto, M. 2789-2798A, 2799-2803A
Hashizume, H. 1973-1980A
Hassam, S. 409-416A, 2075-2089A
Hauge, R.H. 1889-1894A, 1939-1943A
Hawk, J.A. 2363-2366A
He, X.C. 217-223A

Headley, T.J. 2319-2331A
Hellawell, A. 3097-3100A
1861-1871A
Hendrickson, A.A. 1471-1480A
Hendrix, B.C. 1841-1847A
Higashiyama, H. 2171-2177A
Hills, C.R. 3063-3069A
Himbeault, D.D. 2109-2113A
Hippsley, C.A. 3005-3011A
Hirabayashi, M. 797-801A
Hirato, T. 355-363B
Hiskey, J.B. 943-949B
Hoch, M. 2075-2089A
Hoffelner, W. 855-862A
Holden, T.M. 2207-2214A
Holt, R.A. 2207-2214A
Homonnay, Z. 259-264A
Hon, M.H. 1213-1219A
Hong, J.W. 121-127A
Horikawa, H. 915-923A
Howe, J.M. 2911-2920A
Howell, P.R. 51-66A
Hsiao, C.-M. 1335-1343A
1067-1073A
HSU, T.Y. 1695-1701A
Huczko, A. 927-933B
Hughes, D.A. 3013-3024A
Husain, S.W. 1761-1766A
Hussien, S. 1243-1255A
Hutchison, S.G. 249-253B

Iacocca, R.G. 2305-2313A
Ichinose, S. 915-923A
Ignatiev, A. 2639-2643A
Iguchi, Y. 233-242B
Iino, Y. 2603-2606A
Iizumi, M. 793-796A
Ijiri, Y. 2215-2224A
Ilegbusi, O.J. 557-562B
Inoue, A. 383-385A
391-393A
1369-1371A
235-242A
2315-2318A
Ishii, F. 233-242B
Ito, K. 419-425B
643-648B
Izumi, O. 345-352A
353-357A

Jackson, A.G. 23-33A
Jacob, K.T. 465-470B
269-275B
459-463B
Jacobson, T. 1883-1888A
Jata, K.V. 847-854A
973-986A
Jeannotte, D.A. 1051-1059A
Jena, P.K. 331-334B
514-518B
Jensen, C.L. 893-898A
Jeong, W.C. 309-317A
Jiang, C. 734-738A
738-743A
Jiang, X.H. 427-432B
Jiao, Q. 133-140B
Jimbo, I. 623-626B
Jin, I. 3107-3109A
Johansen, S.T. 745-754B
755-764B
Johnson, H.H. 2371-2387A
691-707B
Johnson, J.A. 1931-1937A
Johnson, M.J. 1187-1192A
Johnston, D. 3071-3075A
Jonas, J.J. 417-426A
1403-1413A
1415-1424A
105-120A
Jones, H. 23-33A
Jones, J.W. 2775-2788A
Jones, R.H. 2005-2011A

Kacar, A.S. 1833-1839A
Kacar, S.A. 2847-2855A
Kaczorowski, M. 1319-1334A
Kain, K.E. 2067-2074A
Kaiser, D.L. 935-941B
Kajihara, M. 645-650A
Kalman, Z.H. 217-223A
Kametani, H. 13-24B
25-36B
Kammel, R. 59-65B
67-72B
Kane, J.S. 1379-1383A
341-345B
Kaneshiro, H. 1257-1262A
Kanetkar, C.S. 1833-1839A
Kao, H.P. 941-952A
Karagöz, S. 1395-1401A
Karwacki, E.J. 3045-3055A
Katagiri, K. 1257-1262A

Kato, E. 511-513B
Kattner, U.R. 2389-2397A
Kaukler, W.F. 2625-2630A
Kawahara, M. 181-186B
Kawasaki, Y. 505-507B
Kelly, J.E. 2589-2602A
Kelly, T.F. 2399-2405A
Kenyon, J. 783-787A
Kestenbach, H.-J. 387-389A
Khachaturyan, A.G. 249-258A
Kikuchi, M. 645-650A
Kim, C. 1263-1268A
Kim, C.H. 309-317A
Kim, D. 973-975B
Kim, J.-S. 1721-1726A
Kim, S. 999-1007A
2013-2025A
Kim, Y.G. 1625-1626A
Kim, Y.J. 1849-1852A
Kim, Y.W. 2041-2048A
1634-1638A
King, A.H. 2359-2363A
King, R.P. 677-684B
King, W.E. 2567-2573A
Kipphut, C.M. 1905-1913A
Kirk, D.W. 777-785B
919-925B
141-146B
Kirner, J.F. 3045-3055A
Kleek, J.J. 1372-1374A
Klein, C.F. 1645-1656A
Kleppa, O.J. 1061-1066A
1827-1831A
Klimek, R.B. 1931-1937A
Klimker, H. 909-913A
Knorr, D.B. 1009-1020A
Kobayashi, M. 13-24B
25-36B
Kobayashi, T. 319-327A
Koch, C.C. 2867-2874A
Kolahi-Aval, J. 1481-1490A
Kollie, T. 2319-2331A
Kondo, Y. 1269-1275A
47-52B
Koo, Y.C. 1345-1349A
Koontz, J.S. 1179-1185A
Korevaar, B.M. 925-932A
2415-2426A
Korth, G.E. 2399-2405A
Koss, D.A. 1767-1773A
Kou, S. 1849-1852A
1075-1082A
Koul, A.K. 2049-2066A
Koursaris, A. 2287-2298A
Krauss, G. 579-589A
Krishna Murthy, G.G. 839-850B
885-892B
Krishnamurthy, S. 23-33A
Krishnan, S. 1889-1894A
1939-1943A
Kruger, R.M. 2555-2566A
Krumhansl, J.A. 761-775A
Krzanowski, J.E. 1873-1876A
Kullen, P.S. 881-885A
Kumar, A. 1021-1026A
Kundrat, D.M. 899-908A
Kunitomi, K. 1269-1275A
Kurz, W. 1955-1963A
1965-1971A
Kusiński, J. 377-382A
Küzeci, E. 59-65B
Kwon, H. 2606-2611A

Lai, C.-L. 1895-1898A
Lake, J.S.H. 2805-2817A
Lan, Y. 2225-2231A
Landsberg, A. 477-482B
Langdon, T.G. 2487-2496A
Lange, N. 1385-1394A
Lange, W.F., III 427-440A
Larbalestier, D.C. 1677-1686A
1687-1694A
Latanision, R.M. 2789-2798A
2799-2803A
Lawley, A. 3077-3086A
Laxmanan, V. 2651-2658A
2687-2694A
Le, Y. 1075-1082A
Lecomte-Beckers, J. 2333-2340A
2341-2348A
Lee, J. 2911-2920A
Lee, J.E. 2671-2676A
Lee, J.K. 329-335A
517-526A
Lee, K.B. 2606-2611A
Lee, L.H. 217-223A
Lee, M.-C. 2115-2117A
Lee, S.H. 2179-2206A
Lee, W.J. 337-344A
Lee, W.M. 255-259B
Lei, C.Y. 789-792A
Lele, S. 1703-1709A
Lequeu, Ph. 105-120A
Levi, C.G. 687-697A
699-708A

Lewandowski, J.J. 3005-3011A
Li, B.Q. 397-408B
Li, H. 383-395B
Li, P. 2133-2138A
2139-2151A
Li, P.L. 887-892A
Li, Z. 2445-2455A
Liaw, P.K. 2215-2224A
2233-2246A
Lichter, B.D. 2677-2680A
281-292A
Lim, C.Y. 1625-1626A
Lin, C.I. 685-686B
Lin, D. 2225-2231A
Lin, H.R. 1471-1480A
Lin, J.-C. 441-446A
Lindsey, T.F. 249-258A
Lippold, J.C. 35-50A
Liszka, A. 1367-1369A
Liu, D. 1667-1675A
Liu, W.J. 1403-1413A
Liu, Z. 1415-1424A
1121-1125A
527-542A
Livne, T. 1319-1334A
Lloyd, D.J. 3107-3109A
Lograsso, B.K. 1767-1773A
Lograsso, T.A. 3097-3100A
London, B. 2497-2502A
López, H.F. 1367-1369A
1235-1241A
Louat, N. 2965-2973A
Lui, T.S. 1213-1219A
Luo, C.P. 1153-1162A
Luo, H.L. 734-738A
738-743A
Luthra, K.L. 2091-2098A
2099-2108A
Lynch, D.C. 427-432B
627-641B

Mackinnon, D.J. 187-199B
Magdowski, R.M. 1583-1596A
Magnin, P. 1955-1963A
1965-1971A
Majima, H. 505-507B
355-363B
347-354B
5-12B
53-58B
Makabe, C. 1257-1262A
Makino, H. 2603-2606A
Makita, T. 793-796A
Malcolm, R.C. 731-732A
Marchand, N.J. 2575-2587A
Marder, A.R. 1193-1203A
Margolin, H. 1163-1171A
1575-1581A
591-601A
1727-1737A
2503-2512A
1311-1317A
Margrave, J.L. 1889-1894A
1939-1943A
Marschman, S.C. 627-641B
Martínez, L. 571-577A
Martins, G.P. 95-101B
Masahashi, N. 345-352A
353-357A
Mashima, M. 355-363B
Massalski, T.B. 5-12A
13-21A
1853-1860A
675-686A
Masumitsu, N. 643-648B
Masumoto, T. 383-385A
391-393A
1369-1371A
235-242A
2315-2318A
Matlock, D.K. 579-589A
Mazumdar, D. 507-511B
Mazumder, J. 1703-1709A
1981-1990A
McAlister, A.J. 2893-2900A
McCarron, T.J. 2067-2074A
McCartney, D.G. 385-387A
McClanahan, E.D. 5-12A
McConnell, C. 159-167A
McDermott, B. 2867-2874A
McDowell, D.L. 1277-1293A
McIntyre, N.S. 3071-3075A
McKinney, T.R. 83-91A
McLean, A. 383-395B
McNallan, M.J. 483-491B
2567-2573A
Medina, L.F. 663-668B
Mehrabian, R. 493-503B
Mehrotra, S.P. 839-850B
885-892B
Mei, Y. 734-738A
738-743A
Mendelson, S. 811-818A
Merkley, D.R. 2619-2623A
Meshii, M. 2299-2304A

Meubus, P. 927-933B
Meyn, D. 1626-1631A
Michael, J.R. 953-959A
1876-1878A
Michalek, K.P. 2589-2602A
Michel, D.J. 881-885A
Miller, W.A. 1667-1675A
Min, D.J. 433-439B
Minamino, Y. 467-471A
Miner, R.V. 2733-2739A
Mintz, B. 1481-1490A
Mintz, J.M. 821-827A
Mishra, B. 1295-1304A
Mittemeijer, E.J. 925-932A
2433-2443A
2415-2426A
Miyamoto, Y. 1269-1275A
Miyazaki, S. 915-923A
Moffat, D.L. 1677-1686A
1687-1694A
2389-2397A
Mohamed, F.A. 2741-2752A
Moitra, A. 2847-2855A
1899-1904A
Moore, J.J. 1295-1304A
Moreau, R.J. 737-744B
Mori, H. 1257-1262A
Mori, N. 467-471A
Morii, K. 915-923A
Morii, Y. 793-796A
Morris, J.W., Jr. 249-258A
1563-1568A
Morris, P.R. 2611A
Mortensen, A. 709-721A
Morton, A.J. 199-205A
Mott, G. 2233-2246A
Mou, Y. 1695-1701A
Mueller, R.R. 1645-1656A
Muir, D.M. 37-45B
Mukherjee, A.K. 821-827A
1621-1624A
Mukhopadhyay, P. 453-465A
Mukunthan, K. 2921-2929A
Murgás, L. 259-264A
Murray, J.L. 243-247A
Murthy, A. 765-775B
Murthy, B.V.R. 514-518B
Murty, K.L. 1243-1255A
Muto, S. 2723-2731A
2931-2936A

Nachtrab, W.T. 1305-1309A
Nagamori, M. 547-556B
Nagasaka, T. 233-242B
Nagasawa, A. 793-796A
Nagy, S. 259-264A
Nair, K.U. 669-675B
Nakagawa, T. 265-271A
Nakai, Y. 543-548A
Nakajima, H. 507-511B
Nakajima, Y. 2603-2606A
Nakanishi, N. 793-796A
Nakase, K. 2819-2829A
Nam, S.W. 121-127A
Nandapurkar, P. 3057-3061A
Narendrnath, K.R. 1163-1171A
2503-2512A
Nazmy, M. 855-862A
Nee, C.C. 1569-1573A
Nelson, D.V. 2497-2502A
Nickel, H. 359-371A
Niedringhaus, J.C. 261-268B
Nieh, T.G. 1173-1178A
Nikbin, K.M. 873-880A
Nilmani, M. 83-94B
Nishijima, M. 2603-2606A
Nix, W.D. 3013-3024A
Noda, Y. 265-271A
Norman, P.D. 199-205A
Norman, P.J. 1445-1460A
Notis, M.R. 1193-1203A
Núñez, C. 2937-2944A
933-940A
365-373B
541-546B
Nunoue, S.-Y. 511-513B

Ochiai, S. 1491-1497A
1499-1506A
O'Connor, T.G. 2589-2602A
Ødegård, R. 441-447B
449-457B
Ogawa, O. 623-626B
Ohnishi, N. 797-801A
Oka, M. 447-452A
Okamoto, H. 447-452A
Okuda, H. 1973-1980A
Oliver, W.C. 1173-1178A
Olson, D.L. 95-101B
Olson, G.B. 2705-2711A
Onozuka, T. 797-801A
Osamura, K. 1973-1980A
1491-1497A
1499-1506A

Oshima, R. 2723-2731A
2931-2936A
803-810A
Otsuka, K. 915-923A

Page, R.A. 2477-2486A
Pandit, S.S. 459-463B
Pao, P.S. 1739-1750A
Papazian, J.M. 2945-2953A
Paramguru, R.K. 59-65B
67-72B
Park, S.K. 53-58B
Patuelli, C. 2659-2664A
2695-2703A
Paul, A. 851-858B
Payer, J.H. 153A
Pednekar, S.P. 153A
Pehlke, H.D. 471-476B
Pelloux, R.M. 663-671A
Pelton, A.D. 1819-1825A
Pelton, A.R. 1173-1178A
Perng, T.-P. 651-656A
1187-1192A
145-152A
Perrin, R. 1345-1349A
Perron, J. 171-180B
Perry, K.P.D. 677-684B
Persad, C. 1634-1638A
Peters, E. 53-58B
Peterson, D.T. 67-72A
Philbrook, W.O. 655-661B
Phillips, J.C. 1657-1666A
Piccone, T.J. 1109-1119A
Piekarski, K. 2109-2113A
Place, T.A. 1547-1553A
Pline, A. 1883-1888A
Poirier, D.R. 2349-2354A
3057-3061A
Politis, C. 734-738A
738-743A
Polmear, I.J. 1027-1035A
Pope, D.P. 837-845A
887-892A
Powell, B.M. 2207-2214A
Prasad, S.V. 1365-1367A
Pronko, P.P. 1372-1374A
Puls, M.P. 1507-1522A
2247-2257A
Pyun, S.-I. 1721-1726A

Rabin, B.H. 1523-1532A
Ramachandra, C. 389-391A
Ramachandran, T.R. 1365-1367A
Raman, V. 2355-2359A
1437-1443A
1533-1546A
Ranganathan, S. 1703-1709A
649-654B
Rankin, W.J. 73-81B
519B
Rao, K.B.S. 359-371A
Rao, K.T.V. 549-561A
563-569A
Rathjen, H.-J. 1037-1049A
Reddy, B.R. 514-518B
Reger, M. 2259-2268A
Rego, D.N. 655-661B
Reichman, S.H. 1841-1847A
Reiley, T.C. 1533-1546A
Rémy, L. 2259-2268A
Ren, S.B. 2427-2432A
Revie, R.W. 3071-3075A
Rey, C.A. 2619-2623A
Richardson, L.S. 249-253B
Ricker, R.E. 1775-1783A
Rie, K.-T. 121-127A
Rifkin, J. 783-787A
Rist, A. 787-802B
Ritchie, R.O. 549-561A
563-569A
Rittel, D. 2269-2277A
Rizzo, H.F. 5-12A
Robertson, D.G.C. 831-837B
745-754B
Rohatgi, P.K. 1365-1367A
Roman, I. 2269-2277A
Romig, A.D., Jr. 2319-2331A
35-50A
Rosen, A. 2279-2285A
Rosenthal, B.N. 1915-1917A
Rotem, A. 2279-2285A
Roy, A.K. 273-279A
Rozenak, D. 723-730A
Rutter, J.W. 383-395B

Sadananda, K. 2965-2973A
847-854A
Saenz de Santa
Maria, M 1795-1806A
Sahai, Y. 603-612B
Sahoo, P. 483-491B
967-972B
Saida, J. 2315-2318A
Sakane, J. 397-408B
Samarasekera, I.V. 277-287B
289-301B
Sanchez, V. 943-949B
Sanders, R.E., Jr. 2523-2530A
Sandlin, A.C. 2665-2669A
2645-2650A
Sano, N. 433-439B
Sarazin, J.R. 1861-1871A
Sarma, D.S. 3025-3033A
Sasaki, Y. 959-965B
Sastri, V.S. 3071-3075A
Sathiyamoorthy, D. 669-675B
Scanlon, J.C. 1645-1656A
Scattergood, R.O. 1785-1793A
Schaefer, R.J. 1101-1107A
Schiffers, H. 359-371A
Schlader, B.J. 67-72A
Schneibel, J.H. 571-577A
Schuster, H. 359-371A
Schwalbe, K.-H. 1037-1049A
Schwarzkopf, E.A. 479-486A
Schwerdtfeger, K. 2857-2859A
581-593B
595-602B
Seetharaman, S. 951-957B
513-514B
Seetharaman, V. 2955-2964A
Selverian, J.H. 1193-1203A
Semarge, R.E. 3063-3069A
Senanayake, G. 37-45B
Sentner, D.A. 385-387A
Shah, S. 2677-2680A
Shechtman, D. 2279-2285A
Shen, Y.Z. 2299-2304A
Shiflet, G.J. 1617-1620A
973-986A
Shiohara, Y. 1109-1119A
Shyne, J.C. 2497-2502A
Sichen, D. 951-957B
Sigworth, G.K. 655-661B
385-387A
Simkovich, G. 2115-2117A
Sims, D. 487-494A
Singh, A.K. 2839-2846A
2965-2973A
Singh, J. 1703-1709A
1981-1990A
Singh, N.B. 3087-3096A
Singh, V. 389-391A
Singhal, L.K. 1021-1026A
Sinte Maartensdijk,
J.A 2433-2443A
Sismanis, P.G. 859-870B
Sivaramakrishnan, V. 2741-2752A
Smith, D.A. 1991-2003A
Smith, H.G. 193-198A
Smith, H.H. 881-885A
Soffa, W.A. 225-234A
Sogo, Y. 2171-2177A
Sohn, H.Y. 973-975B
871-884B
719-729B
Sommerville, I.D. 383-395B
Soullard, J. 571-577A
Spear, S.R. 732-733A
Speidel, M.O. 1583-1596A
Spitzer, K.-H. 581-593B
595-602B
Sridhar, G. 3025-3033A
Srikanth, S. 465-470B
269-275B
Srinivasan, G.N. 514-518B
Srinivasan, S. 1785-1793A
Staffansson, L.-I. 951-957B
303-310B
513-514B
Stahl, D.R. 1277-1293A
Stansbury, E.E. 941-952A
Stefanescu, D.M. 2671-2676A
2839-2846A
1833-1839A
2847-2855A
1899-1904A
Steinbrunner, D.L. 579-589A
Stephens, J.J. 657-667A
Stephenson, E.T. 953-959A
1876-1878A
Sterten, Å. 449-457B
Stock, S.R. 1277-1293A
Stone, G.J. 2355-2359A
Strum, M. 1563-1568A
Strychor, R. 225-234A
3103-3107A
Sudarshan, T.S. 1547-1553A
Sugden, A.A.B. 669-674A
1597-1602A
Sugiyama, M. 803-810A
Sun, S. 959-965B
Sundararaman, M. 453-465A
Suresh, S. 3035-3044A
Suzuki, T. 789-792A
2857-2859A
Szekely, J. 765-775B
525-540B
557-562B
Tacke, K.-H. 2857-2859A
581-593B
595-602B
Takahashi, K. 129-135A
Takasugi, T. 345-352A
353-357A
Takeda, S. 645-650A
Takimoto, M. 265-271A
Talbot, D.E.J. 227-232B
Tanaka, R. 645-650A
Tanner, L.E. 783-787A
Taszarek, B.J. 2215-2224A
Tensi, H.M. 2681-2686A
Terlinde, G. 1037-1049A
Tewari, S.N. 1351-1364A
1711-1720A
Themelis, N.J. 133-140B
Thomas, B.G. 277-287B
289-301B
2589-2602A
Thomas, M.T. 2005-2011A
Thompson, A.W. 301-308A
Thonstad, J. 449-457B
Thurlby, J.A. 103-112B
113-121B
123-132B
Tien, J.K. 1657-1666A
1657-1666A
479-486A
1841-1847A
Tobler, R.L. 1626-1631A
Todd, J.A. 2133-2138A
2139-2151A
Toguri, J.M. 181-186B
Tomita, Y. 1555-1561A
2513-2521A
Tomota, Y. 1563-1568A
Topor, L. 1061-1066A
1827-1831A
Tosten, M.H. 51-66A
Trivedi, R. 2955-2964A
Tromans, D. 2753-2764A
2765-2773A
Tsai, A.-P. 391-393A
1369-1371A
Tschegg, E.K. 3035-3044A
Tu, K.N. 1991-2003A
Tuah-Poku, I. 675-686A
Tuller, H.L. 637-644A
Turnbull, A. 1795-1806A

Ueno, M. 2171-2177A
Ulvan, E. 2267-2298A
Upadhyaya, G.S. 2153-2161A
Ureña, A. 165-170B
Uwadiale, G.G.O.O. 731-735B
Uz, M. 1429-1435A

van der Schaaf, P.J. 925-932A
Van Rooyen, M. 2433-2443A
Vandenavyle, J.A. 3063-3069A
Varin, R.A. 2109-2113A
Vasatis, I.P. 863-871A
Vasudevan, A.K. 2911-2920A
51-66A
731-732A
Vasudevan, V.K. 941-952A
Vaynman, S. 1051-1059A
Vecchio, K.S. 2875-2884A
2885-2891B
Verlinden, B. 207-216A
Vértes, A. 259-264A
Verwijs, J.P. 201-212B
Vierrether, C.B. 719-729B
Vijayaraghavan, T.V. 591-601A
1311-1317A
Viñals, J. 365-373B
Voorhees, P.W. 2713-2721A
Vujic, D. 2445-2455A

Wadley, H.N.G. 493-503B
Wadsworth, J. 1173-1178A
Wagoner, R.H. 293-300A
Wai, C.M. 249-253B
Wallace, J.F. 2687-2694A
Walters, R.P. 2163-2170A
Wang, L. 471-476B
2687-2694A
Wang, P. 617-622B
Wang, P.-C. 2457-2465A
2831-2837A
Wang, S.T. 2427-2432A
Wang, Y.-B. 1335-1343A
Warren, R. 1785-1793A
Was, G.S. 2555-2566A
2775-2788A
Watson, J.W. 2299-2304A
Wayman, C.M. 1703-1709A
2407-2413A
Weatherly, G.C. 1153-1162A
Webster, C.T. 153A
Webster, D. 603-615A
Webster, G.A. 873-880A
Weckman, D.C. 201-212B
Weertman, J.R. 1135-1146A
999-1007A
Wei, D.Y.C. 213-226B
Wei, R.P. 1739-1750A
543-548A
Weil, R. 1569-1573A
Weiss, B.Z. 1991-2003A
Weissmann, S. 217-223A
Welsch, G. 1121-1125A
527-542A
Wert, J.A. 617-625A
Westwood, A.R.C. 749-758A
155-164B
Whang, S.H. 2445-2455A
Whewell, R.J. 731-735B
White, C.L. 1807-1818A
Wilkinson, D.S. 829-835A
Williams, D.B. 2675-2884A
2885-2891B
Williams, J.C. 225-234A
73-82A
Willis, D.J. 2805-2817A
Wilsdorf, H.G.F. 2363-2366A
Wilson, R.D. 477-482B
Winegar, J.E. 2207-2214A
Winsa, E. 1945-1953A
Woje, K. 745-754B
Wong, S.H. 1657-1666A
1657-1666A
Woodford, D.A. 2305-2313A
Woychik, C.G. 13-21A
1853-1860A
Wright, J.K. 375-382B
Wright, R.N. 2399-2405A
1125-1127A
1127-1128A
Wu, J. 2225-2231A
Wu, Y. 1109-1119A
Wüthrich, C. 855-862A
Wuttig, M. 789-792A
Wynnyckyj, J.R. 73-81B
519B
Wyss, R.K. 893-898A
2523-2530A

Xiang, C. 409-418B

Yafuso, T. 1257-1262A
Yamada, Y. 265-271A
777-781A
Yamamoto, H. 319-327A
Yamane, T. 467-471A
Yang, C. 3109-3112A
Yang, S. 409-418B
Yaworski, M. 1371-1372A
Yu, W. 549-561A
563-569A

Zaremski, D.R. 1083-1100A
Zhang, X. 617-622B
Zhao, C. 1575-1581A
Zhao, J. 1179-1185A
2611A
Zhao, Y.-S. 1067-1073A
Ziegler, D. 737-744B
Zukotynski, S. 1345-1349A

Combined Subject Index

Abatement (pollution)
See Pollution abatement

Aberration
See Distortion

Absolute viscosity
See Viscosity

Absorption (material)
See also Hydrogen storage
Kinetics of Hydrogen Absorption in Alpha Titanium. 1425-1427A

Acceleration measurement
See Accelerometers

Accelerometers
Making Acceleration Data More Accessible and Useful to Microgravity Investigators. 2631-2637A

Acid cleaning
See Pickling

Acid leaching
Kinetics of Nonoxidative Leaching of Galena in Perchloric, Hydrobromic, and Hydrochloric Acid Solutions. 541-546B

Acid pickling
See Pickling

Acids (inorganic)
See Inorganic acids

Acoustic emission
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. 493-503B
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A

Actinide metal alloys
See Plutonium base alloys
Uranium base alloys

Actinide metal compounds
See Plutonium compounds

Actinide metals
See Plutonium
Uranium

Activated carbon
The Behavior of Thiourea and Flotation Reagents in Zinc Electrowinning Circuits. 187-199B

Activated charcoal
See Activated carbon

Activation energy
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A
Thermodynamics and Kinetics of $\delta \rightarrow \alpha$ Martensitic Transformation in Plutonium Alloys. 2705-2711A
The Thermal Activation Energy for Fatigue of Fe—1Cr— 0.5Mo. 2979-2987A

Activity (chemical)
The Effect of Temperature on Nickel Solubility in Silica Saturated Fayalite Slags From 1523-1623K. 243-247B
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1400°C. 334-336B
Water and Solute Activities of the Solution Systems of H_2SO_4—$CuSO_4$—H_2O and HCl—$CuCl_2$—H_2O. 347-354B
A New Treatment for Determining the Activities From Ternary *Miscibility Gap: the O—Cu—Pb System.* 373-376A
The Influence of the Ternary Interaction Parameter ϵ_B^B on the Activity of Bismuth in Molten Copper. 427-432B
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Activity (chemical), Alloying effects
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A

Activity coefficients
See Activity (chemical)

Additives
See Master alloys

Age hardening
See Precipitation hardening

Age hardening steels
See Precipitation hardening steels

Agents
See Catalysts

Agglomerating
See Agglomeration

Agglomeration
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. 2847-2855A

Agglomeration, Field effects
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A

Aggregation
See Agglomeration

Aging
See also Aging (artificial)
Quench aging
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni *β Phase Alloys.* 1761-1766A
The Tempering of Iron—Carbon Martensite; Dilatometric and Calorimetric Analysis. 2415-2426A

Aging (artificial)
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A
Correlation Among Microstructure, Strength, and Electrical *Conductivity of Cu—Ni—Be Alloy.* 2279-2285A
On the Morphology of the Modulated Precipitation of Extended Multiplets and Fe_5C_4 Epsilon or Eta Carbide Obtained by Aging and *Tempering in Fe—C Martensite.* 2901-2909A
Structure and Deformation Behavior of T_1 Precipitate Plates in an Al—2Li—1Cu Alloy. 2911-2920A
Effects of SiC Whiskers and Particles on Precipitation in Alu*minum Matrix Composites.* 2945-2953A
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Agitation
See Electromagnetic stirring

Aircraft components, Materials selection
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A

Aircraft equipment
See Aircraft components

Alkali metal compounds
See Lithium compounds
Sodium compounds

Alkali metals
See Cesium
Lithium
Potassium
Sodium

Alkaline earth metal alloys
See Strontium

Alkaline earth metal compounds
See Calcium compounds
Lime

Alkaline earth metals
See Beryllium
Calcium
Magnesium
Strontium

Alloy plating
See also Brass plating
Pulsed Electrodeposition of Layered Brass Structures. 1569-1573A

Alloy powders, Crystal growth
Thermal Considerations on the Recalescence of Alloy Pow*ders.* 687-697A

Alloy powders, Synthesis
Formation of Ultra-Fine Amorphous Powders in Fe—M—B *(M = Transition Metal) Systems by Chemical Reduction* Method and Their Thermal and Magnetic Properties. 2315-2318A

Alloy steels
See also Austenitic stainless steels
Carbon manganese steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium steels
Duplex stainless steels
Electrical steels
Ferritic stainless steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Maraging steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Precipitation hardening steels
Stainless steels
Titanium steels
Vanadium steels

Alloy steels, Mechanical properties
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A

Alloying
See Mechanical alloying

Alloys
See Alloy steels
Bearing alloys
Dispersion hardening alloys
Ferrous alloys
Master alloys
Precipitation hardening alloys
Shape memory alloys
Superalloys

Alodine process
See Chromating

Alpha annealing
See Annealing

Alphatizing
See Annealing

Alumina
See Aluminum oxide

Aluminum, Alloying elements
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A
A Preliminary Study of the Influence of Separate and Combined Aluminum and Nickel Additions on the Properties of a Secondary Hardening Steel. 3103-3107A

Aluminum, Binary systems
Calculation of the Titanium—Aluminum Phase Diagram. 243-247A
The Cata- or Metatectic Reaction—Occurrence and *Microstructural Development.* *3097-3100A*

Aluminum, Casting
Performance Analysis of the Aluminum Casting Furnace. 171-180B
Mathematical Modeling of Meniscus Profile and Melt Flow in Electromagnetic Casters. 397-408B
A Simple Fluid Mechanical Model for Planar Flow Casting Melt-Spinning. 571-579B

Aluminum, Composite materials
Modeling of Infiltration Kinetics for Liquid Metal Processing of Composites. 95-101B
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A

Aluminum, Corrosion
Effect of Cathodic Charging on the Mechanical Properties of Aluminum. 2299-2304A

Aluminum, Diffusion
Prediction of Solute Diffusion Coefficients in Liquid Metals. *273-279A*
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A
Thermodynamics of Segregation in Alloys. *2091-2098A*

Aluminum, Extraction
The Mathematical Modeling Revolution in Extractive Metallurgy. *525-540B*

Aluminum, Heat treatment
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. *493-503B*

Aluminum, Impurities
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. *823-830B*

Aluminum, Mechanical properties
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A

Aluminum, Melting
Discussion of "The Role of Boron in the Grain Refinement of Aluminum With Titanium" and Authors' Reply. 385-387A

Aluminum, Powder technology
Thermal Considerations on the Recalescence of Alloy Powders. 687-697A
The Evolution of Microcrystalline Structures in Supercooled Metal Powders. 699-708A

Aluminum, Quaternary systems
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—*Mg Alloys.* 1631-1634A

Aluminum, Reactions (chemical)
Reactivity of Al—2.5% Li Alloy With Water as Studied by the *Exploding Wire Technique.* *255-259B*
Reaction Mechanism for the CaO—Al and CaO—CaF_2 Desulfurization of Carbon-Saturated Iron. 261-268B

Aluminum, Reduction (chemical)
The Moreau—Evans Hydrodynamic Model Applied to Actual Hall—Héroult Cells. 737-744B

Aluminum, Solubility
On the Solubility of Aluminum in Cryolitic Melts. 449-457B

Aluminum, Thermal properties
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B

Aluminum base alloys, Alloy development
Materials for Advanced Studies and Devices. *155-164B*
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A
Materials for Advanced Studies and Devices. 749-758A
Design and Development of an Experimental Wrought Aluminum Alloy for Use at Elevated Temperatures. 1027-1035A

Aluminum base alloys, Casting
Characterization of the Aging Response of a Melt-Spun Al— Be—Li Alloy Ribbon. 1173-1178A
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Aluminum base alloys, Composite materials
Modeling of Infiltration Kinetics for Liquid Metal Processing of Composites. 95-101B
Columnar Dendritic Solidification in a Metal-Matrix Compos- ite. 709-721A
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A
Erosion of Fiber Reinforced Al—4% Cu Composites. 1785-1793A
Directional Solidification of Al—Ni/SiC Composites During *Parabolic Trajectories.* *1899-1904A*
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. *2847-2855A*
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A
A Method of Assessing the Reactivity Between SiC and Molten Aluminum. 3107-3109A

Aluminum base alloys, Crystal growth
On the Formation of Dispersoids During Rapid Solidification of an Al—Fe—Ni Alloy. 1101-1107A

Aluminum base alloys, Crystal lattices
Electron Diffraction Study of α- and α_T-AlFeSi. 893-898A
A Finite Element Model of a Persistent Slip Band Based Upon Electron Microscopic Evidence. 2457-2465A

Aluminum base alloys, Directional solidification
Dendritic Solidification of Alloys in Low Gravity 2671-2676A
Influence of Microgravity on the Morphology of the Directionally Solidified Front in an AlSi Alloy. 2681-2686A

Aluminum base alloys, Heat treatment
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. 493-503B

Aluminum base alloys, Mechanical properties
Growth of Slip Bands During Fatigue of 6061-T6 Aluminum. 83-91A
Fatigue Crack Propagation in Aluminum—Lithium Alloy 2090. *I. Long Crack Behavior.* *549-561A*
Fatigue Crack Propagation in Alumium—Lithium Alloy 2090. II. Small Crack Behavior. 563-569A
On Through Thickness Crystallographic Texture Gradient in *Al—Li—Cu—Zr Alloy.* *731-732A*
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A
A Topological Study of Superplastic Deformation in an Al—Li Alloy With a Bimodal Grain Size Distribution. 1621-1624A
*Chemical and Metallurgical Aspects of Environmentally As-*sisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A
The Role of Hydrogen in Corrosion Fatigue of High Purity *Al—Zn—Mg Exposed to Water Vapor.* *1775-1783A*
Yield Stress as Determined From Hardness Measurements for Mechanically Alloyed Aluminum Base Alloys. 2363-2366A
The Mechanical Properties of the Superplastic Al—33Cu Eu-*tectic Alloy.* *2487-2496A*
Microstructure—Property Relationship in a 2XXX Aluminum Alloy With Magnesium Addition. 2523-2530A
*The Absence of Steady-State Flow During Large Strain Plas-*tic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Aluminum base alloys, Melting
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A

Aluminum base alloys, Microstructure
*Modeling of Thermomechanical Processing of Heat-*Treatable Aluminum Alloys. 617-625A

Aluminum base alloys, Phase transformations
Phase Transformation During Annealing of Rapidly Solidified Aluminum-Rich Al—Fe—Si Alloys. 2893-2900A

Aluminum base alloys, Phases (state of matter)
Quasicrystalline Phase in Al—Si—Mn System Prepared by Annealing of Amorphous Phase. 383-385A
Microstructural Characterization of the Dispersed Phases in *Al—Ce—Fe System.* *1645-1656A*

Aluminum base alloys, Powder technology
Aluminum—Lithium Powder Metallurgy Alloys With Improved *Toughness.* *603-615A*
Thermal Considerations on the Recalescence of Alloy Powders. 687-697A
Use of Ion Scattering in Characterizing the Surface Oxide of *P/M Aluminum Alloy 7091.* *1372-1374A*

Aluminum base alloys, Reactions (chemical)
Reactivity of Al—2.5% Li Alloy With Water as Studied by the *Exploding Wire Technique.* *255-259B*
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Aluminum base alloys, Solubility
The Solubility of Hydrogen in Liquid Binary Al—Li Alloys. *227-232B*
Volume Effects and Associations in Liquid Alloys. 465-470B

Aluminum base alloys, Structural hardening
The Aging Characteristics of an Al—2% Li—3% Cu—0.12% Zr Alloy at 190°C. 51-66A
Theoretical Investigation of the Precipitation of δ' in Al—Li. 249-258A
Investigation of Phase Transformation in an Al—0.58 wt.% *Fe Alloy by Mössbauer Spectroscopy.* *259-264A*
Growth and Coarsening of G.P. Zones in Al—Zn Alloys. 1973-1980A
Precipitation of Guinier—Preston Zones in Aluminum—*Magnesium; a Calorimetric Analysis of Liquid-Quenched* and Solid-Quenched Alloys. 2433-2443A
Structure and Deformation Behavior of T_1 Precipitate Plates in an Al—2Li—1Cu Alloy. 2911-2920A

Aluminum base alloys, Welding
On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, *5456, and 5086.* *319-329B*
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B
Welding Parameters and the Grain Structure of Weld Metal— a Thermodynamic Consideration. 1075-1082A

Aluminum compounds
See also Aluminum oxide

Aluminum compounds, Crystal lattices
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T_1 (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2885-2891B

Aluminum compounds, Mechanical properties
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type $Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound. 353-357A
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. *479-486A*
The Strength of Ni_3Al Containing Titanium and Boron. 732-733A

Aluminum compounds, Solubility
On the Solubility of Aluminum Carbide in Cryolitic Melts. *441-447B*

Aluminum killed steels, Metal working
The Variation of Plastic Anisotropy During Straining. 2805-2817A
A Wrinkling Index for Press Forming. *2831-2837A*

Aluminum oxide, Composite materials
Transverse Elastic Moduli of Unidirectional Fiber Composites *With Interfacial Debonding.* *129-135A*

Aluminum oxide, Reactions (chemical)
Conditions Affecting the Formation of Chlorinated Carbon *Compounds During Carbochlorination.* *477-482B*

Amorphous materials
See also Metallic glasses

Amorphous materials, Thin films
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A

Amplifiers
See Lasers

Analyzing
See Areal analysis
Auger electron spectroscopy
Mathematical analysis
Statistical analysis
Stress analysis
Surface analysis (chemical)
Volumetric analysis
X ray diffraction

Andrade method
See Crystal growth

Androforming
See Stretch forming

Angles (geometry)
See Contact angle

Anisotropy
See also Elastic anisotropy
Magnetic anisotropy

Anisotropy, Temperature effects
Effect of Annealing Temperature on Yield Anisotropy of *Zircaloy-4 TREX.* 1243-1255A

Annealing
See also Bright annealing
Some Fundamental Aspects of Annealing and Pickling Stainless Steels. 1083-1100A
Determination of Dihedral Angle Distributions in Polycrystals: *Application to α + β Brass.* *1147-1151A*
Effect of Annealing Temperature on Yield Anisotropy of Zircaloy-4 TREX. 1243-1255A
Intercritical Annealing as a Means of Improving Impact Properties *of Plate Steel.* *1481-1490A*
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A
Phase Transformation During *Annealing of Rapidly Solidified* Aluminum-Rich Al—Fe—Si Alloys. 2893-2900A

Anodic dissolution
High Frequency Stage I *Corrosion Fatigue of Austenitic Stainless Steel (316L).* 2753-2764A

Antidomains
See Domains

Antimony
Grain Boundary Segregation of Sulfur and Antimony in Iron Alloys. 2005-2011A

Antimony, Alloying additive
Effect of Antimony on the Creep Fracture of Stainless Steel. 571-577A

Antimony, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B

Arc welding
See also Gas tungsten arc welding
Shielded arc welding
Shielded metal arc welding
Consolidation of Metallic Glass Ribbons Using Electric Discharge Welding. 1634-1638A

Arc welds
See Welded joints

Areal analysis
Calculation of the Product Phase Grain Boundary Area *During Solid State Transformations.* *2123-2131A*

Argon, Environment
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A

Argon arc welding
See Gas tungsten arc welding

Arrhenius activation energy
See Activation energy

Arsenic, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B
Thermodynamics for Arsenic and Antimony in Copper Matte *Converting—Computer Simulation.* *547-556B*

Artificial aging
See Aging (artificial)

Atmospheres
See Controlled atmospheres

Atomic diffusion
See Diffusion

Atomic properties
See Atomic structure

Atomic structure
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A
Electron Diffraction Study of α- and α_T-AlFeSi. 893-898A

Atomization
See Atomizing

Atomizing
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A
Niobium-Alloyed High Speed Steel by Powder Metallurgy. *1395-1401A*

Auger electron spectroscopy
Scanning Auger Microprobe Study of Hot-Dipped Regular-*Spangle Galvanized Steel. I. Surface Composition of As-*Produced Sheet. 1603-1608A

Austempering
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
Swing Back in Kinetics Near M_S in Hypereutectoid Steels. 447-452A

Austenite
See also Retained austenite
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A

Austenitic stainless steels, Corrosion
Cracking Kinetics of Two-Phase Stainless Steel Alloys in Hydrogen Gas. 145-152A
Grain Boundary Segregation in Austenitic Stainless Steels and Its Effect on Intergranular Corrosion and Stress Corrosion Cracking. 495-504A
High Frequency Stage I *Corrosion Fatigue of Austenitic Stainless Steel (316L).* 2753-2764A
Stage I Corrosion Fatigue Crack Crystallography in Austenitic Stainless Steel (316L). 2765-2773A

Austenitic stainless steels, Heat treatment
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A

Austenitic stainless steels, Mechanical properties
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
On the Effect of Carbide Precipitation During Creep of 304 and 316 Type Stainless Steels. 387-389A
Effect of Antimony on the Creep Fracture of Stainless Steel. 571-577A
Effects of Water Vapor on Hydrogen Induced Slow Crack *Growth in Stainless Steels.* *651-656A*
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A
Mechanistic Similarities Between Hydrogen and Temperature Effects on the Ductile-to-Brittle Transition of a Stainless Steel. 1547-1553A
The Flow Equation and Its Necking Criterion in Austenitic *Cryogenic Fe—Mn—Al—X Steels.* *1625-1626A*
Cleavage-Like Fracture Along Slip Planes in Fe—18Cr—3Ni—13Mn—0.37N Austenitic Stainless Steel at Liquid Helium Temperature. 1626-1631A

Austenitic stainless steels, Metal working
The Effect of Grain Size on the Bulk Formability and Tensile Properties of Austenitic Stainless Steel Types 304 and 316. 2287-2298A

Austenitic stainless steels, Microstructure
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A
The Microstructure and Phase Relationships in Rapidly Solidified Type 304 Stainless Steel Powders. 2399-2405A
Statistical Considerations on Uniform Grain Size. 2937-2944A

Austenitic stainless steels, Phase transformations
Nature of the γ and γ' Phases in Austenitic Stainless Steels Cathodically Charged With Hydrogen. 723-730A
Effect of Temperature and Strain Distribution on Martensitic Transformation During Uniaxial Testing of AISI-304 Stainless Steel. 1021-1026A

Austenitic stainless steels, Welding
Free Surface Flow and Heat Transfer in Conduction Mode Laser Welding. 851-858B
Effects of Oxygen and Sulfur on Alloying Element Vaporization *Rates During Laser Welding.* *967-972B*

Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A

Austenitizing
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—*the Role of Impurity Segregation in Stress* Corrosion Cracking of High Strength Steel. 2225-2231A
The Effect of Austenitizing Temperature on the Fracture Initiation Toughness of As-Quenched HP9-4-20 Steel. 2989-3003A

Auto oxidation
See Oxidation

Autodiffusion
See Diffusion

Autogenous smelting
See Flash smelting

Automobile components
See Automotive components

Automotive components, Materials selection
Laser Transformation Hardening of Iron—Carbon and Iron—*Carbon—Chromium* Steels. 2013-2025A

A15 compounds, Phase transformations
Electron—Phonon Based Local Mode Descriptions of Displacive Transformations. 177-183A
Pretransformation Phenomena as Revealed by Elastic Waves. 185-191A

Babbitt
See Bearing alloys

Bainite
Effect of Microstructure on Plane-Strain Fracture Toughness of AISI 4340 Steel. 2513-2521A

Bainite, High temperature effects
Bainite Formation in Low Carbon Cr—Ni Steels. 1695-1701A

Balling
See Agglomeration

Banded structure
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Basic oxygen processes
See Oxygen steel making

Basic oxygen steel making
See Oxygen steel making

Batch type furnaces
See Converters

Baths
See Metal baths

BCC metals, Phase transformations
Computer Study of Tweed as a Precursor to a Martensitic Transformation of a BCC Lattice. 783-787A

Beams (radiation)
See Electron beams

Bearing alloys, Composite materials
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A

Beehive kilns
See Kilns

Bend properties
See Bend strength

Bend strength, Composition effects
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A

Bendability
See Formability

Bending
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Bending strength
See Bend strength

Beryllium, Reactions (chemical)
Mass Spectrometric Study of the Activitics of the Fe—Ge System at 1550°C. 511-513B

Billets, Casting
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A

Bimetals, Nondestructive testing
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A

Binary systems, Phases (state of matter)
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A
Calculation of the Titanium—Aluminum Phase Diagram. 243-247A
Magnetic-Induced Tricritical Points in Alloys. 441-446A
High Temperature Thermodynamics of the Cr—Cr_2N—N_2 System. 471-476B
Thermodynamics of the Cr—Mn System Using an Isopiestic Technique. 649-654B
On the Slopes of Phase Boundaries. 1819-1825A
Densities of Pb—Sn Alloys During Solidification. 2349-2354A
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Binary systems, Solubility
Mass Spectrometric Study of the Activities of the Fe—Ge System at 1550°C. 511-513B

Binary systems, Thermal properties
Enthalpies of a Binary Alloy During Solidification. 3057-3061A

Bismuth, Binary systems
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Bismuth, Impurities
The Interaction Between Oxygen and Bismuth in Dilute Solution in Copper at 1300°C. 623-626B

Bismuth, Reactions (chemical)
Evaluation of the Activity and Molecular Form of Bismuth in Copper Smelting Slags. I. Ternary Silicate Slags. 627-641B

Bismuth, Ternary systems
The Influence of the Ternary Interaction Parameter ϵ_{Bi}^{Bi} on the Activity of Bismuth in Molten Copper. 427-432B

Bismuth base alloys, Directional solidification
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Bismuth base alloys, Physical properties
Experimental Measurement and Numerical Computation of Velocity and Turbulence Parameters in a Heated Liquid Metal System. 765-775B

Bismuth compounds, Powder technology
Mechanical Alloying of Brittle Materials. 2867-2874A

Blades
See Turbine blades

Blankets (atmospheres)
See Controlled atmospheres

Blast furnace slags, Reactions (chemical)
Thermodynamic Activity of Na_2O in Na_2O—CaO—SiO_2, Na_2O—MgO—SiO_2, and Na_2O—CaO—SiO_2—Al_2O_3 Melts at 1400°C. 655-661B

Blasts (explosions)
See Explosions

Blister copper, Refining
*The Interaction Between Oxygen and Bismuth in Dilute Solu*tion in Copper at 1300°C. 623-626B

Blistering
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A

Blooms (metal), Casting
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B

Blunging
See Mixing

Body centered cubic metals
See BCC metals

Body centered orthorhombic lattice
See Orthorhombic lattice

Bohr model
See Atomic structure

Boiler scale
See Scale (corrosion)

Bomb reduction
See Reduction (chemical)

Bonding strength
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A
Correlation of Mechanical Properties With Nondestructive *Evaluation of Babbitt Metal/Bronze Composite Interface.* 2215-2224A

Boron, Alloying additive
Discussion of "The Role of Boron in the Grain Refinement of *Aluminum With Titanium" and Authors' Reply.* 385-387A

Boron, Impurities
The Influence of Boron on the Grain Boundary Chemistry and *Microstructure of Ni—16Cr—9Fe—0.03C.* 2555-2566A

BOS process
See Oxygen steel making

Boundaries
See Grain boundaries
Phase boundary

Boundary layer
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A

Brass plating
Pulsed Electrodeposition of Layered Brass Structures. 1569-1573A

Brasses
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A

Brasses, Diffusion
Effect of High Pressure on Interdiffusion in Cu—Zn Alloys at Temperatures Near the Melting Point. 467-471A

Brasses, Extrusion
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A

Brasses, Heat treatment
Determination of Dihedral Angle Distributions in Polycrystals: Application to $\alpha + \beta$ Brass. 1147-1151A

Brasses, Mechanical properties
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A

Brasses, Phase transformations
Electron Diffuse Scattering Studies of Premartensitic Alloys: β' Cu—Zn, β' Ni—Al, In—Tl, and Fe—Ni. 199-205A
Beta-Phase Stability and Martensitic Nucleation in Hume—Rothery Alloys. 207-216A

Brasses, Structural hardening
Slip Observations in 70-30 Alpha Brass. 1575-1581A

Brick kilns
See Kilns

Bridgman method
See Crystal growth

Bright annealing
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A

Brillouin zone
Modulated Lattice Relaxation in β-Based Premartensitic Phase. 777-781A

Brittle fracture, Impurity effects
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Brittleness
See also Temper brittleness

Brittleness, Cryogenic effects
Cleavage-Like Fracture Along Slip Planes in Fe—18Cr—3Ni—13Mn—0.37N Austenitic Stainless Steel at Liquid Helium Temperature. 1626-1631A

Bronzes, Composite materials
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A

Bubbles, Diffusion
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A

Bubbling
Bubbling at High Flow Rates in Inviscid and Viscous Liquids (Slags). 83-94B
Fluid Dynamics in Bubble Stirred Ladles. I. Experiments. 745-754B
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B

Bulge forming
See Bulging

Bulging, High temperature effects
Influence of Solidification Structure on Creep Behavior of Nonalloyed Steel at High Temperatures. 2857-2859A

Burn up
See Fuel consumption

Burning
See Combustion

Burnout
See Fuel consumption

Cadmium base alloys, Phase transformations
X-Ray Study of the Premartensitic Phenomena in AuCd. 265-271A

Caesium
See Cesium

Cakes (metal)
See Ingots

Calcining
See Roasting

Calcium, Alloying elements
Volume Effects and Associations in Liquid Alloys. 465-470B

Calcium, Extraction
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B

Calcium compounds
See also Lime

Calcium compounds, Crystal growth
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B

Calcium compounds, Reactions (chemical)
Thermodynamics of Ca—CaF_2 and Ca—$CaCl_2$ Systems for the Dephosphorization of Steel. 643-648B

Calcium oxide
See Lime

Calculating
See Computation

Calculation
See Computation

Capillarity
Experimental Study of Thermocapillary Flows in a Thin Liquid Layer With Heat Fluxes Imposed on the Free Surface. 1895-1898A

Carbides
See also Silicon carbide
Tungsten carbide
On the Effect of Carbide Precipitation During Creep of 304 and 316 Type Stainless Steels. 387-389A

Carbides, Crystal growth
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A

Carbides, Crystal lattices
The Influence of Mo_2C Morphology and Distribution on the Fatigue Crack Initiation and Propagation Behavior of Fe—C—Mo Dual-Phase Steels. 973-986A

Carbides, Solubility
On the Solubility of Aluminum Carbide in Cryolitic Melts. 441-447B

Carbon, Alloying elements
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A

Carbon, Diffusion
Change in Direction of Carbon Thermotransport in Nb—V System With Alloying. 1429-1435A

Carbon, Quaternary systems
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Carbon, Reactions (chemical)
Conditions Affecting the Formation of Chlorinated Carbon Compounds During Carbochlorination. 477-482B
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A

Carbon, Ternary systems
A Thermodynamic Evaluation of the Fe—Cr—C System. 627-636A

Carbon, Trace elements
Analysis of Nonisothermal Transformation Kinetics: Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A

Carbon compounds
See also Carbides
Carbon dioxide
Tungsten carbide

Carbon compounds, Physical properties
Mixing Fuel Particles for Space Combustion Research Using Acoustics. 1931-1937A

Carbon dioxide, Reactions (chemical)
On the Interfacial Rate of Reaction of CO_2 With a Calcium Ferrite Melt. 959-965B

Carbon fibers, Coating
Coating of Graphite Fibers With Tungsten Carbide Using Solid and Liquid Copper as a Transfer Medium. 2109-2113A

Carbon fibers, Composite materials
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A

Carbon manganese steels, Mechanical properties
Effects of Transformed Ferrite Growth on the Tensile Fracture Characteristics of a Dual-Phase Steel. 309-317A
Void Formation During Tensile Testing of Dual Phase Steels. 579-589A

Carbon steels
See also Aluminum killed steels
Carbon manganese steels
Killed steels

Carbon steels, Casting
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

Carbon steels, Cleaning
Studies on the Determination of Surface Deuterium in AISI 1062, 4037, and 4140 Steels by Secondary Ion Mass Spectrometry. 3071-3075A

Carbon steels, Crystal growth
Influence of Rare Earth Metals on the Nucleation and Solidification Behavior of Iron and 1045 Steel. 383-395B

Carbon steels, Heat treatment
Intercritical Annealing as a Means of Improving Impact Properties of Plate Steel. 1481-1490A
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A
The Tempering of Iron—Carbon Martensite; Dilatometric and Calorimetric Analysis. 2415-2426A

Carbon steels, Mechanical properties
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A
Influence of Solidification Structure on Creep Behavior of Nonalloyed Steel at High Temperatures. 2857-2859A

Carbon steels, Metal working
The Variation of Plastic Anisotropy During Straining. 2805-2817A

Carbon steels, Phase transformations
Effect of Deformation on the Austenite-to-Ferrite Transformation in a Plain Carbon and Two Microalloyed Steels. 417-426A
Swing Back in Kinetics Near M_S in Hypereutectoid Steels. 447-452A
A Theoretical Analysis of the Spinodal Decomposition in Fe—C Martensite During Aging Stage of Tempering. 2427-2432A

Carbon steels, Sorption
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A

Carbon steels, Structural hardening
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A

Carbon steels, Welding
A Model for the Strength of the As-Deposited Regions of Steel Weld Metals. 1597-1602A

Carbothermic reactions
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Carbothermic Reduction of Silicon Dioxide—a Thermodynamic Investigation. 249-253B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B
An Ionic Diffusion Mechanism of Chromite Reduction. 677-684B
The Effect of Alkali Salt Catalyst on the Carbothermic Reduction of Nickel Oxide. 685-686B

Cast iron
See also Gray iron
Nodular iron
White iron

Cast iron, Rolling
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A

Casting
See Continuous casting
Horizontal continuous casting
Melt spinning

Casting defects
Channel Formation in Pb—Sn, Pb—Sb, and Pb—Sn—Sb Alloy Ingots and Comparison With the System NH_4Cl—H_2O. 1861-1871A
Study of Microporosity Formation in Nickel-Base Superalloys. 2341-2348A
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A

Castings
See also Continuous cast shapes
Ingots

Castings, Mechanical properties
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A

Castings, Microstructure
Assessment of Service Induced Microstructural Damage and Its Rejuvenation in Turbine Blades. 2049-2066A

Catalysts
The Effect of Alkali Salt Catalyst on the Carbothermic Reduction of Nickel Oxide. 685-686B

Cathode ray polarographs
See Polarimeters

Cathodic coatings (oxide)
See Oxide coatings

Cathodic protection
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Cavitation
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A

Cavitation, Deformation effects
Microstructural Observations in Cyclically Deformed Pb—Sn Solid Solution Alloy. 1437-1443A

Cellular precipitates
Orowan Strengthening by Mo_2C Fibers and Needle Interphase Precipitates in Fe—C—Mo Dual-Phase Steels. 1617-1620A

Cellular precipitates, Diffusion effects
Inhibition of Cyclic Grain Boundary Migration Through Cellular Precipitation in Pb—5% Sn Alloy. 2355-2359A

Cementite, Thermal properties
Gibbs Free Energy of Formation of Cementite, Fe_3C. 2115-2117A

Cerium, Alloying elements
Discussion of "Microdistribution of Cerium in Steel" and Author's Reply. 723A

Cesium, Binary systems
On the Slopes of Phase Boundaries. 1819-1825A

Chalcogenides
See Sulfides

Charring
See Combustion

Chemical analysis
See Surface analysis (chemical)
Volumetric analysis

Chemical attack
See Intergranular corrosion

Chemical cleaning
See Pickling

Chemical composition
Discussion of "Microdistribution of Cerium in Steel" and Author's Reply. 723A
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A

Chemical kinetics
See Reaction kinetics

Chemical processes
See Reactions (chemical)

Chemical properties
See Heat of activation
Heat of formation
Heat of reaction

Chemical reactions
See Reactions (chemical)

Chemical reactors, Design
Fluid Dynamics in Channel Reactors Stirred by Submerged Gas Injection. 603-612B

Chemical reduction
See Reduction (chemical)

Chemical tests
See Surface analysis (chemical)
Volumetric analysis

Chemistry
See Electrochemistry

Chlorides, Electrical properties
Electrical Conductivity of Acidic Chloride Solutions. 53-58B

Chlorides, Environment
Transgranular Stress-Corrosion Cracking of Disordered Cu—25Au in Aqueous Chloride and Sulfate Media. 281-292A

Chlorides, Reactions (chemical)
Analysis of Dissolution Rate of Metal Oxide in Acidic Chloride Solution in Terms of Water Activity. 505-507B

Chlorides, Solubility
Water and Solute Activities of the Solution Systems of H_2SO_4—$CuSO_4$—H_2O and HCl—$CuCl_2$—H_2O. 347-354B

Chlorination
Conditions Affecting the Formation of Chlorinated Carbon Compounds During Carbochlorination. 477-482B
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B
Studies on Oxychlorination of MoS_2 in a Fluid Bed Reactor. 669-675B

Chromate coating
See Chromating

Chromate coatings, Chemical analysis
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. II. Surface Composition of Chromated Sheet. 1609-1616A

Chromating
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. II. Surface Composition of Chromated Sheet. 1609-1616A

Chromium, Alloying elements
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Chromium, Binary systems
High Temperature Thermodynamics of the Cr—Cr_2N—N_2 System. 471-476B
Thermodynamics of the Cr—Mn System Using an Isopiestic Technique. 649-654B

Chromium, Diffusion
Thermodynamics of Segregation in Alloys. 2091-2098A

Chromium, Extraction
Vapor Phase Reduction of Chromic Oxide in an Ar—H_2 RF Plasma. 927-933B

Chromium, Quaternary systems
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Chromium, Ternary systems
A Thermodynamic Evaluation of the Fe—Cr—C System. 627-636A
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A
An Experimental Study and a Thermodynamic Evaluation of the Fe—Cr—Mo System. 1385-1394A
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Chromium, Thermal properties
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Chromium base alloys, Surface properties
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B

Chromium compounds, Microstructure
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Chromium molybdenum nickel steels
See Nickel chromium molybdenum steels

Chromium molybdenum steels
See also Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels

Chromium molybdenum steels, Cleaning
Studies on the Determination of Surface Deuterium in AISI 1062, 4037, and 4140 Steels by Secondary Ion Mass Spectrometry. 3071-3075A

Chromium molybdenum steels, Corrosion
Discussion of "Sulfide Stress Cracking Susceptibility of Nickel Containing Steels" and Authors' Reply. 153A

Chromium molybdenum steels, Mechanical properties
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
Creep Crack Growth Simulation Under Transient Stress Fields. 829-835A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A
The Thermal Activation Energy for Fatigue of Fe—1Cr—0.5Mo. 2979-2987A
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Chromium molybdenum steels, Metallography
Quantitative Fractography: a Modern Perspective. 961-971A

Chromium molybdenum steels, Structural hardening
A Preliminary Study of the Influence of Separate and Combined Aluminum and Nickel Additions on the Properties of a Secondary Hardening Steel. 3103-3107A

Chromium molybdenum vanadium steels, Mechanical properties
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A

Chromium molybdenum vanadium steels, Microstructure
Measuring Creep Damage Using Microradiography. 837-845A

Chromium nickel molybdenum steels
See Nickel chromium molybdenum steels

Chromium nickel steels
See Nickel chromium steels

Chromium ores, Reduction (chemical)
An Ionic Diffusion Mechanism of Chromite Reduction. 677-684B

Chromium steels
See also Austenitic stainless steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Duplex stainless steels
Ferritic stainless steels
Nickel chromium molybdenum steels
Nickel chromium steels
Stainless steels

Chromium steels, Heat treatment
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A

Chromium vanadium steels
See Chromium molybdenum vanadium steels

Claddings, Microstructure
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Cleaning
See Pickling

Cleavage, Environmental effects
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A

Clustering
Volume Effects and Associations in Liquid Alloys. 465-470B

Coating
See Alloy plating
Brass plating
Chromating
Hot dip galvanizing
Platinum plating

Coatings
See Chromate coatings
Electroplates
Hot dip coatings
Oxide coatings
Protective coatings
Undercoatings

Cobalt, Alloying elements
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Cobalt, Extraction
Reducibility of Laterite Ores. 181-186B
Leaching of Manganese Nodule in Ammoniacal Medium Using Ferrous Sulfate as the Reductant. 331-334B

Cobalt, Recovering
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B

Cobalt base alloys, Mechanical properties
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Cobalt base alloys, Phases (state of matter)
Spinodal Decomposition of a Co—Ti—Nb Alloy. 1703-1709A

Cobalt base alloys, Powder technology
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A
Formation of Ultra-Fine Amorphous Powders in Fe—M—B (M = Transition Metal) Systems by Chemical Reduction Method and Their Thermal and Magnetic Properties. 2315-2318A

Cobalt base alloys, Welding
Consolidation of Metallic Glass Ribbons Using Electric Discharge Welding. 1634-1638A

Coefficient of friction
See Friction

Cold cracking (welds)
See Weld defects

Cold deformation
See Deformation

Cold ductility
See Ductility

Cold formability
See Formability

Cold forming
See Cold working

Cold reduction
See Cold working

Cold shortness
See Brittleness

Cold working
See also Stretch forming
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A

Columbium
See Niobium

Columbium base alloys
See Niobium base alloys

Columbium compounds
See Niobium compounds

Columnar structure
The Nonuniform Distribution of Inclusions in Low-Alloy Steel Weld Deposits. 669-674A
Columnar Dendritic Solidification in a Metal-Matrix Composite. 709-721A

Combustion
Mixing Fuel Particles for Space Combustion Research Using Acoustics. 1931-1937A

Compacting
See also Hot isostatic pressing
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A
Densification of Oxide Superconductors by Hot Isostatic Pressing. 1841-1847A

Compacts
See Powder compacts
Sintered compacts

Compliance (elasticity)
See Modulus of elasticity

Composite materials
See also Bimetals
Fiber composites
Particulate composites
Whisker composites
Materials for Advanced Studies and Devices. 155-164B
Materials for Advanced Studies and Devices. 749-758A

Composite materials, Crystal growth
Directional Solidification of Al—Ni/SiC Composites During Parabolic Trajectories. 1899-1904A

Composite materials, Fabrication
Modeling of Infiltration Kinetics for Liquid Metal Processing of Composites. 95-101B

Composite materials, Mechanical properties
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Composite materials, Microstructure
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A

Compositions
See Chemical composition

Compression strength
See Compressive strength

Compressive modulus
See Modulus of elasticity

Compressive strength, Microstructural effects
The Strength of Ni_3Al Containing Titanium and Boron. 732-733A

Compressive yield strength
See Compressive strength

Computation
Equilibria Between the Rare Earth Elements, Oxygen and Sulfur, in Molten Iron. 409-418B

Computer programs
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A
Fractal Analysis of a Nucleation and Growth Process. 1371-1372A

Computer simulation
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B
Computer Study of Tweed as a Precursor to a Martensitic Transformation of a BCC Lattice. 783-787A
A Computer Simulation on Tensile Strength of Metal Matrix Composites Reinforced With Surface-Damaged Fibers. 1491-1497A

Computing
See Computation

Concast
See Continuous casting

Concentrates (ores), Electrical properties
Measurements of Dielectric Properties for Particulate Sphalerite Samples and Zinc Concentrates. 13-24B

Concentrates (ores), Oxidation
Correlation Between Dielectric Properties and Aqueous Oxidation Rate for Pulverized Sphalerites and Zinc Concentrates. 25-36B

Concentration (stress)
See Stress concentration

Condensation resins
See Silicone resins

Conducting sheet analog
See Heat transmission

Conductivity
See Resistivity

Conductivity (electrical)
See Resistivity

Constitutional diagrams
See Phase diagrams

Consumption
See Energy consumption
Fuel consumption

Contact angle
Determination of Dihedral Angle Distributions in Polycrystals: Application to $\alpha + \beta$ Brass. 1147-1151A
The Wetting Characteristics and Surface Tension of Some Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia Substrates. 1833-1839A

Contact testing
See Ultrasonic testing

Continuous cast shapes, Mechanical properties
Influence of Solidification Structure on Creep Behavior of Nonalloyed Steel at High Temperatures. 2857-2859A

Continuous casting
See also Horizontal continuous casting
Mathematical Modeling of Meniscus Profile and Melt Flow in Electromagnetic Casters. 397-408B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. I. Theory and Experiments With Cold Models. 581-593B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B
An Experimental Study on Process Variables in Crystal Growth by Ohno Continuous Casting. 1849-1852A
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A

Continuous casting, Development
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

Control
See Process control

Controllability
See Stability

Controlled atmospheres
Kinetics of Neck Growth During Loose Stack Sintering. 2153-2161A
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A

Conversion coating (process)
See Chromating

Conversion coatings
See Chromate coatings

Converters
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B

Cooling
See Supercooling

Cooling rate
Investigation of Panel Crack Formation in Steel Ingots. I. Mathematical Analysis and Mid-Face Panel Cracks. 277-287B
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B
Intercritical Annealing as a Means of Improving Impact Properties of Plate Steel. 1481-1490A
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Copper, Alloying elements
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy. 1667-1675A
Erosion of Fiber Reinforced Al—4% Cu Composites. 1785-1793A

Copper, Binary systems
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Copper, Bonding
A Study of the Transient Liquid Phase Bonding Process Applied to a Ag/Cu/Ag Sandwich Joint. 675-686A

Copper, Coatings
Coating of Graphite Fibers With Tungsten Carbide Using Solid and Liquid Copper as a Transfer Medium. 2109-2113A

Copper, Diffusion
Prediction of Solute Diffusion Coefficients in Liquid Metals. 273-279A
Effect of High Pressure on Interdiffusion in Cu—Zn Alloys at Temperatures Near the Melting Point. 467-471A

Copper, Extraction
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B
Oxidation of Molten Copper Matte. 47-52B
Leaching of Manganese Nodule in Ammoniacal Medium Using Ferrous Sulfate as the Reductant. 331-334B
The Mathematical Modeling Revolution in Extractive Metallurgy. 525-540B

Copper, Mechanical properties
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A
Determination of Parameters for Thermally Activated Glide From Stress—Strain Curves at Different Temperatures and Strain Rates. 2975-2978A

Copper, Melting
Process Mineralogy of Suspended Particles From a Simulated Commercial Flash Smelter. 719-729B
Observations on the Dynamics of Electromagnetically Levitated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A
Acoustic Levitation Technique for Containerless Processing at High Temperatures in Space. 2619-2623A

Copper, Quaternary systems
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—Mg Alloys. 1631-1634A

Copper, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

Copper, Recovering
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B

Copper, Reduction (chemical)
An Investigation of Carbonaceous Materials Reducing Ferric Ions in Aqueous Solution. 709-717B

Copper, Refining
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B
Fluid Dynamics in Channel Reactors Stirred by Submerged Gas Injection. 603-612B
The Interaction Between Oxygen and Bismuth in Dilute Solution in Copper at 1300°C. 623-626B

Copper, Rolling
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A

Copper, Ternary systems
Phase Stability Relationships and Glass Formation in the System Cu—Ag—In. 13-21A
A New Treatment for Determining the Activities From Ternary Miscibility Gap: the O—Cu—Pb System. 373-376A
The Influence of the Ternary Interaction Parameter ϵ_B^B on the Activity of Bismuth in Molten Copper. 427-432B
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A

Copper, Thermal properties
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Copper base alloys
See also Brasses
Bronzes

Copper base alloys, Corrosion
Transgranular Stress-Corrosion Cracking of Disordered Cu—25Au in Aqueous Chloride and Sulfate Media. 281-292A

Copper base alloys, Crystal growth
Fractal Analysis of a Nucleation and Growth Process. 1371-1372A

Copper base alloys, Directional solidification
The Influence of Interfacial Energies and Gravitational Levels on the Directionally Solidified Structures in Hypermonotectic Alloys. 2665-2669A
Directional Solidification of Lead—Copper Immiscible Alloys in a Cyclic Gravity Environment. 2677-2680A
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Copper base alloys, Mechanical properties
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni β Phase Alloys. 1761-1766A
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Copper base alloys, Melting
Influence of Gravity Level and Interfacial Energies on Dispersion-Forming Tendencies in Hypermonotectic Cu—Pb—Al Alloys. 2645-2650A

Copper base alloys, Microstructure
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A

Copper base alloys, Phase transformations
Orientation Dependence of $\beta_1 \rightarrow \beta'_1$ Stress-Induced Martensitic Transformation in a Cu—Al—Ni Alloy. 915-923A

Copper base alloys, Structural hardening
Correlation Among Microstructure, Strength, and Electrical Conductivity of Cu—Ni—Be Alloy. 2279-2285A

Copper base alloys, Surface properties
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B

Copper compounds, Crystal lattices
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T_1 (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2885-2891B

Copper mattes, Melting
Saturation of Copper—Iron Mattes With Solid Magnetite. 935-941B

Copper mattes, Oxidation
Oxidation of Molten Copper Matte. 47-52B

Copper mattes, Refining
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B

Core hardness
See Hardness

Corrosion
See Corrosion fatigue
Hot gas corrosion
Intergranular corrosion
Scale (corrosion)
Sulfurization

Corrosion cracking
See Stress corrosion cracking

Corrosion effects
See Scale (corrosion)

Corrosion fatigue
Corrosion Fatigue Crack Initiation in a Mode II Notch Specimen. 1067-1073A
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A
High Frequency Stage I Corrosion Fatigue of Austenitic Stainless Steel (316L). 2753-2764A
Stage I Corrosion Fatigue Crack Crystallography in Austenitic Stainless Steel (316L). 2765-2773A

Corrosion fatigue, Diffusion effects
The Role of Hydrogen in Corrosion Fatigue of High Purity Al—Zn—Mg Exposed to Water Vapor. 1775-1783A

Corrosion fatigue, Environmental effects
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Corrosion fatigue, Microstructural effects
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

Corrosion fatigue, Temperature effects
Effects of Frequency and Temperature on Short Fatigue Crack Growth in Aqueous Environments. 543-548A

Corrosion prevention
See also Cathodic protection
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A
Studies on the Determination of Surface Deuterium in AISI 1062, 4037, and 4140 Steels by Secondary Ion Mass Spectrometry. 3071-3075A

Corrosion products
See Scale (corrosion)

Corrosion resistance, Alloying effects
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A

Cost savings
See Economics

Crack growth
See Crack propagation

Crack initiation
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A

Crack initiation, Impurity effects
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Crack initiation, Microstructural effects
Crack Initiation and Near-Threshold Surface Fatigue Crack Propagation Behavior of the Iron-Base Superalloy A-286. 301-308A
Effects of Transformed Ferrite Growth on the Tensile Fracture Characteristics of a Dual-Phase Steel. 309-317A

Crack propagation
Fatigue Crack Propagation in Aluminum—Lithium Alloy 2090. I. Long Crack Behavior. 549-561A
Fatigue Crack Propagation in Alumium—Lithium Alloy 2090. II. Small Crack Behavior. 563-569A
Effects of Water Vapor on Hydrogen Induced Slow Crack Growth in Stainless Steels. 651-656A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load in Notched Rupture Tests. 863-871A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
Microstructure and Fracture Toughness of the Aged β-Ti Alloy Ti—10V—2Fe—3Al. 1037-1049A
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A
The Effect of Tin, Aluminum, and Nitrogen on the Hot Ductility of a Carbon—Manganese Steel Between 700-1200°C. 1305-1309A
The Influence of Hydride Size and Matrix Strength on Fracture Initiation at Hydrides in Zirconium Alloys. 1507-1522A
Mechanistic Similarities Between Hydrogen and Temperature Effects on the Ductile-to-Brittle Transition of a Stainless Steel. 1547-1553A
High Frequency Stage I Corrosion Fatigue of Austenitic Stainless Steel (316L). 2753-2764A
Stage I Corrosion Fatigue Crack Crystallography in Austenitic Stainless Steel (316L). 2765-2773A

Crack propagation, Alloying effects
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A

Crack propagation, Cryogenic effects
Cleavage-Like Fracture Along Slip Planes in Fe—18Cr—3Ni—13Mn—0.37N Austenitic Stainless Steel at Liquid Helium Temperature. 1626-1631A

Crack propagation, Deformation effects
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A

Crack propagation, Diffusion effects
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A

Crack propagation, Environmental effects
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Crack propagation, Heating effects
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. 3035-3044A

Crack propagation, High temperature effects
Cyclic Deformation and Fracture in Pb—Sn Solid Solution Alloy. 1533-1546A
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A

Crack propagation, Impurity effects
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A

Crack propagation, Microstructural effects
Crack Initiation and Near-Threshold Surface Fatigue Crack Propagation Behavior of the Iron-Base Superalloy A-286. 301-308A
Effects of Transformed Ferrite Growth on the Tensile Fracture Characteristics of a Dual-Phase Steel. 309-317A
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A
Microstructure Effects on Tensile Properties of Tungsten—Nickel—Iron Composites. 1523-1532A
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A

Crack propagation, Stress effects
Creep Crack Growth Simulation Under Transient Stress Fields. 829-835A

Crack propagation, Temperature effects
Effects of Frequency and Temperature on Short Fatigue Crack Growth in Aqueous Environments. 543-548A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A
The Thermal Activation Energy for Fatigue of Fe—1Cr—0.5Mo. 2979-2987A

Crack resistance
See Crack propagation

Cracking (fracturing)
See also Crack initiation
Stress corrosion cracking

On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, 5456, and 5086. 319-329B
Detection of the Initiation and Growth of Hydrogen-Induced Cracks in Armco Iron Using Continuous Modulus Measurements. 473-478A
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. 493-503B
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. 2305-2313A

Cracking (fracturing), Cooling effects
Investigation of Panel Crack Formation in Steel Ingots. I. Mathematical Analysis and Mid-Face Panel Cracks. 277-287B

Cracking (fracturing), Diffusion effects
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A

Cracking (fracturing), Heating effects
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni β Phase Alloys. 1761-1766A

Cracking (fracturing), Microstructural effects
Effect of Microstructure on Fracture Behavior of Complex Structure in 6Ni—0.3C Steel. 2606-2611A

Cracking (fracturing), Stress effects
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B

Cratering (wear)
See Wear

Cratering (welding)
See Weld defects

Creep (materials)
See also Creep life
Creep rate
Creep rupture strength
Creep strength
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A
Measuring Creep Damage Using Microradiography. 837-845A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Assessment of Service Induced Microstructural Damage and Its Rejuvenation in Turbine Blades. 2049-2066A
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A

Creep (materials), High temperature effects
Influence of Solidification Structure on Creep Behavior of Nonalloyed Steel at High Temperatures. 2857-2859A

Creep (materials), Impurity effects
Superplastic Deformation Behavior in Commercial and High Purity Zn—22% Al. 2741-2752A

Creep (materials), Microstructural effects
A Topological Study of Superplastic Deformation in an Al—Li Alloy With a Bimodal Grain Size Distribution. 1621-1624A

Creep (materials), Temperature effects
Determination of Parameters for Thermally Activated Glide From Stress—Strain Curves at Different Temperatures and *Strain Rates.* 2975-2978A
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate *Temperatures.* 3013-3024A

Creep life
Creep—Fatigue Life Prediction in Terms of Nucleation and *Growth of Fatigue Crack and Creep Cavities.* 121-127A
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Creep limit
See Creep (materials)

Creep properties
See Creep (materials)

Creep rate
A15 Compound Deformation and Secondary Slip in V_3Si. 1125-1127A

Creep resistance
See Creep strength

Creep rupture strength
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load in Notched Rupture Tests. 863-871A
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Creep strength
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A

Creep strength, Alloying effects
Effect of Antimony on the Creep Fracture of Stainless Steel. 571-577A

Creep strength, Composition effects
On the Effect of Carbide Precipitation During Creep of 304 and 316 Type Stainless Steels. 387-389A

Creep strength, Temperature effects
Design and Development of an Experimental Wrought Aluminum Alloy for Use at Elevated Temperatures. 1027-1035A

Creep tests
Creep Crack Growth Simulation Under Transient Stress Fields. 829-835A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A

Creeping
See Creep (materials)

Critical temperature
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A

Cross slip
A15 Compound Deformation and Secondary Slip in V_3Si. 1125-1127A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Cross slip, Alloying effects
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Cross tension test
See Tension tests

Crushing strength
See Compressive strength

Cryogenic temperature
See Cryogenics

Cryogenics
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A

Cryolite, Solubility
On the Solubility of Aluminum Carbide in Cryolitic Melts. 441-447B
On the Solubility of Aluminum in Cryolitic Melts. 449-457B

Crystal defects
See also Dislocations
Displacements (lattice)
Computer Study of Tweed as a Precursor to a Martensitic Transformation of a BCC Lattice. 783-787A
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy 1667-1675A
A Finite Element Model of a Persistent Slip Band Based Upon Electron Microscopic Evidence. 2457-2465A

Crystal defects, Cooling effects
Effect of Rapid Solidification and Alloying Addition on Lattice Distortion and Atomic Ordering in $L1_0$ TiAl Alloys and Their Ternary Alloys. 2445-2455A

Crystal growth
See also Epitaxial growth
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A
Containment of a Silicone Fluid Free Surface in Reduced Gravity. 1883-1888A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A

Crystal growth, Environmental effects
Ground-Based Microgravity Materials Science Research at NASA's Microgravity Materials Science Laboratory. 1915-1917A
Meteorites as Specimens for Microgravity Research. 1919-1923A

Crystal lattices
See also Orthorhombic lattice
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A

Crystal orientation
See Crystal structure

Crystal structure
See also Equiaxed structure
Unit cell
Hematite Single Crystal Reduction Into Magnetite With CO— CO_2. 311-317B
Orientation Mapping. 403-408A
Computer Study of Tweed as a Precursor to a Martensitic Transformation of a BCC Lattice. 783-787A
The Nucleation of Iron on Dense Wustite: a Morphological Study. 787-802B
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A
Coupled Growth Zone in Fe—18Cr—C Alloys. 1367-1369A
Intercrystalline Structure Distribution in Polycrystalline Materials. 2611A
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T_1 (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2885-2891B
On the Morphology of the Modulated Precipitation of Extended Multiplets and Fe_3C_4 Epsilon or Eta Carbide Obtained by Aging and Tempering in Fe—C Martensite. 2901-2909A
Structure and Deformation Behavior of T_1 Precipitate Plates in an Al—2Li—1Cu Alloy. 2911-2920A

Crystal structure, Heating effects
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A

Crystallinity
See Crystal structure

Crystallization
See also Recrystallization
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A
Quasicrystalline Phase in Al—Si—Mn System Prepared by Annealing of Amorphous Phase. 383-385A

Crystallization, Field effects
Influence of Microgravity on the Morphology of the Directionally Solidified Front in an AlSi Alloy. 2681-2686A

Crystallization, Heating effects
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Crystallization, Radiation effects
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A

Crystallization, Temperature effects
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Crystallography
Orientation Mapping. 403-408A
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Stage I Corrosion Fatigue Crack Crystallography in Austenitic Stainless Steel (316L). 2765-2773A

Crystals
See Single crystals
Whiskers (metals)

Curie temperature
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A

Current efficiency
The Behavior of Thiourea and Flotation Reagents in Zinc Electrowinning Circuits. 187-199B

Curves
See Stress strain curves
TTT curves

Cutting tools, Materials selection
Niobium-Alloyed High Speed Steel by Powder Metallurgy. 1395-1401A

Cyclic loads
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A

Czochralski process
See Crystal growth

D H process
See Vacuum degassing

Damage
See also Radiation damage
Measuring Creep Damage Using Microradiography. 837-845A

Damping
Fluid Oscillation in the Drop Tower. 2625-2630A

Decarburizing
The Nucleation of Carbon Monoxide Bubbles in Molten Iron—Carbon Drops Reacting With Oxidizing Gases. 831-837B

Decomposition
See Eutectoid decomposition
Phase decomposition
Pyrolysis
Spinodal decomposition

Decomposition reactions
See Pyrolysis

Deep drawability
See Drawability

Deep sea nodules
See Sea nodules

Defects
See also Casting defects
Crystal defects
Dislocations
Displacements (lattice)
Surface defects
Weld defects
Effect of Geometrical Defects in Forming Sheet Steel by Biaxial Stretching. *2067-2074A*

Deflagration
See Combustion

Deformability
See Formability

Deformation
See also Plastic deformation
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A

Deforming
See Deformation

Degassing
See Vacuum degassing

Dendrite
See Dendritic structure

Dendritic structure
Columnar Dendritic Solidification in a Metal-Matrix Composite. 709-721A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A

Dendritic structure, Composition effects
Study of Solidification Features of Nickel-Base Superalloys in Relation With Composition. 2333-2340A

Dendritic structure, Cooling effects
Dendritic Growth of Undercooled Nickel—Tin. III. 1109-1119A
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A
Dendritic Solidification in Binary Alloys. 3087-3096A

Dendritic structure, Field effects
Influence of Microgravity on the Morphology of the Directionally Solidified Front in an AlSi Alloy. 2681-2686A
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A

Densification
Kinetics of Neck Growth During Loose Stack Sintering. 2153-2161A

Densification, Microstructural effects
Densification of Titanium Powder During Hot Isostatic Pressing. 1767-1773A

Density, Composition effects
Densities of Pb—Sn Alloys During Solidification. 2349-2354A

Density, Deformation effects
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A

Density, Microstructural effects
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A

Density, Pressure effects
Densification of Oxide Superconductors by Hot Isostatic Pressing. 1841-1847A

Deoxidation
See Deoxidizing

Deoxidizing
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B

Dephosphorizing
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B
*The Calcium—Phosphorus and the Simultaneous Calcium—*Oxygen and Calcium—Sulfur Equilibria in Liquid Iron. 617-622B
Thermodynamics of Ca—CaF_2 and Ca—$CaCl_2$ Systems for the *Dephosphorization of Steel.* 643-648B

Deposition
See Alloy plating
Chromating
Electrodeposition
Platinum plating

Descaling
Some Fundamental Aspects of Annealing and Pickling Stainless Steels. 1083-1100A

Desorption
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B

Desorption, Deformation effects
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A

Desulfurizing
Reaction Mechanism for the CaO—Al and CaO—CaF_2 Desulfurization of Carbon-Saturated Iron. 261-268B

Deuterium, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Development
See Technology transfer

Diagrams
See Phase diagrams

Diamond pyramid hardness
Yield Stress as Determined From Hardness Measurements *for Mechanically Alloyed Aluminum Base Alloys.* *2363-2366A*

Die steels, Alloy development
An Approach to Developing an Alternative Hot Work Die *Steel.* *1751-1760A*

Dielectric constant
Measurements of Dielectric Properties for Particulate Sphal*erite Samples and Zinc Concentrates.* *13-24B*

Diffraction
See Electron diffraction
Neutron diffraction
X ray diffraction

Diffraction patterns
See Kikuchi lines

Diffusion
See also Thermal diffusion
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy. 1667-1675A
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A
Surface Segregation in MCrAlY Alloys. 2099-2108A
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. *2305-2313A*
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Diffusion, Coating effects
Evaluation of High-Temperature Diffusion Barriers for the Pt—Mo System. 2163-2170A

Diffusion bonding
See Diffusion welding

Diffusion coefficient
See Diffusion

Diffusion couples
See Diffusion

Diffusion rate
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Diffusion welding
A Study of the Transient Liquid Phase Bonding Process Applied to a Ag/Cu/Ag Sandwich Joint. 675-686A

Diffusivity
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Diffusivity, Alloying effects
Change in Direction of Carbon Thermotransport in Nb—V System With Alloying. 1429-1435A

Diffusivity, Coating effects
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A

Diffusivity, Composition effects
Solubility and Diffusion of Hydrogen in Vanadium—Oxygen Alloys. 67-72A

Diffusivity, Pressure effects
Effect of High Pressure on Interdiffusion in Cu—Zn Alloys at Temperatures Near the Melting Point. 467-471A

Dimensional measurements
See Thickness measurements

Dimensional stability
Gravity and Configurational Energy Induced Microstructural Changes in Liquid Phase Sintering. 1905-1913A

Dimensions
See Particle size

Diodes
Materials for Advanced Studies and Devices. 155-164B
Materials for Advanced Studies and Devices. 749-758A

Dioxides
See Carbon dioxide
Silicon dioxide
Titanium dioxide

Dip coatings
See Hot dip coatings

Dipping
See Hot dipping

Direct reduction
See Hydrogen reduction

Directional solidification
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A
Coupled Growth Zone in Fe—18Cr—C Alloys. 1367-1369A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. II. Mechanisms. 1965-1971A

Directional solidification, Environmental effects
Directional Solidification of Al—Ni/SiC Composites During Parabolic Trajectories. 1899-1904A

Directionally solidified eutectics
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Discontinuous precipitates
See Cellular precipitates

Dishing
See Bulging

Dislocation climb
See Dislocation mobility

Dislocation density
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. 2723-2731A

Dislocation mobility
A15 Compound Deformation and Secondary Slip in V_3Si. 1125-1127A

Dislocation mobility, Alloying effects
The Effect of Alloying Elements and Microstructure on the *Strength and Fracture Resistance of Pearlitic Steel.* 2819-2829A

Dislocation mobility, Corrosion effects
The Role of Dislocations During Transport of Hydrogen in Hydrogen *Embrittlement of Iron.* 2799-2803A

Dislocation mobility, Diffusion effects
Experimental Study of Hydrogen Transport During Plastic Deformation in Iron. 2789-2798A

Dislocations
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Dislocations, Microstructure
Structure of a Small Angle Tilt Grain Boundary in Zinc. 2359-2363A

Dispersion hardening alloys, Alloy development
Materials for Advanced Studies and Devices. 155-164B
Materials for Advanced Studies and Devices. 749-758A
Niobium-Alloyed High Speed Steel by Powder Metallurgy. 1395-1401A

Dispersion hardening alloys, Mechanical properties
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A

Dispersion hardening alloys, Melting
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A

Dispersions
On the Formation of Dispersoids During Rapid Solidification of an Al—Fe—Ni Alloy. 1101-1107A

Dispersoids
See Dispersions

Displacement spikes
See Displacements (lattice)

Displacements (lattice)
Modulated Lattice Relaxation in β-Based Premartensitic *Phase.* 777-781A

Dissimilar metals, Bonding
A Study of the Transient Liquid Phase Bonding Process Ap*plied to a Ag/Cu/Ag Sandwich Joint.* 675-686A

Dissociation energy
See Free energy of formation

Dissolution
See also Anodic dissolution
Dissolution of Columbite and Tantalite in Acidic Fluoride *Media.* 355-363B
Dissolution Kinetics of Argentian Plumbojarosite From Old Tailings of Sulfatizing Roasting Pyrites by HCl—$CaCl_2$ Leaching. 365-373B
Dissolution Kinetics of Particulate Graphite Injected Into Iron/Carbon Melts. 375-382B
Equilibria Between the Rare Earth Elements, Oxygen and *Sulfur, in Molten Iron.* 409-418B
On the Solubility of Aluminum Carbide in Cryolitic Melts. 441-447B
Analysis of Dissolution Rate of Metal Oxide in Acidic Chloride *Solution in Terms of Water Activity.* 505-507B

Dissolving
See Dissolution

Distortion
A Wrinkling Index for Press Forming. 2831-2837A

Domains
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. 811-818A
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A

Drawability
The Variation of Plastic Anisotropy During Straining. 2805-2817A

Drawing (heat treatment)
See Tempering

Drying
A Dynamic Mathematical Model of the Complete Grate/Kiln Iron-Ore Pellet Induration Process. 103-112B
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B
Energy Cost Minimization in Grate/Kiln Induration. 123-132B

Dual phase steels, Heat treatment
Intercritical Annealing as a Means of Improving Impact Properties of Plate Steel. 1481-1490A

Dual phase steels, Mechanical properties
Effects of Transformed Ferrite Growth on the Tensile Fracture Characteristics of a Dual-Phase Steel. 309-317A
Void Formation During Tensile Testing of Dual Phase Steels. 579-589A
The Influence of Mo_2C Morphology and Distribution on the Fatigue Crack Initiation and Propagation Behavior of Fe—C—Mo Dual-Phase Steels. 973-986A
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A
The Law of Mixtures Applied to the Plastic Deformation of *Two-Phase Alloys of Coarse Microstructures.* 2027-2040A

Dual phase steels, Microstructure
Statistical Considerations on Uniform Grain Size. 2937-2944A

Dual phase steels, Structural hardening
Orowan Strengthening by Mo_2C Fibers and Needle Interphase Precipitates in Fe—C—Mo Dual-Phase Steels. 1617-1620A

Ductile brittle transition
Mechanistic Similarities Between Hydrogen and Temperature Effects on the Ductile-to-Brittle Transition of a Stainless Steel. 1547-1553A

Ductile fracture
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A

Ductile fracture, Deformation effects
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A

Ductile fracture, Microstructural effects
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A

Ductile iron
See Nodular iron

Ductility
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A

Ductility, Alloying effects
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type $Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound. 353-357A
Effect of Antimony on the Creep Fracture of Stainless Steel. 571-577A

Ductility, Composition effects
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A
Effects of Oxygen and Heat Treatment on the Mechanical Properties of Alpha and Beta Titanium Alloys. 527-542A

Ductility, Diffusion effects
Effect of Cathodic Charging on the Mechanical Properties of Aluminum. 2299-2304A

Ductility, Heating effects
*The Effects of Austenitization Temperature on the High Tem*perature Ductility of Fe—P—S Alloys. 887-892A
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A

Ductility, Microstructural effects
Porosity and Tensile Ductility in Al—Zn Alloys. 517-526A
The Effect of Triaxial Stress Field on Intermediate Tempera-ture Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A

Ductility, Stress effects
Test Temperature and Strain Rate Effects on the Properties of a Tungsten Heavy Alloy. 487-494A

Ductility, Temperature effects
The Effect of Tin, Aluminum, and Nitrogen on the Hot Ductility of a Carbon—Manganese Steel Between 700-1200°C. 1305-1309A

Dump leaching
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

Duomelt process
See Vacuum arc melting

Duplex stainless steels, Corrosion
Cracking Kinetics of Two-Phase Stainless Steel Alloys in Hydrogen Gas. 145-152A

Duplex stainless steels, Mechanical properties
Effects of Water Vapor on Hydrogen Induced Slow Crack Growth in Stainless Steels. 651-656A
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A

Duplex stainless steels, Melting
*The Partitioning of Alloying Elements in Vacuum Arc Re*melted, Palladium-Modified PH 13-8 Molybdenum Alloys. 3063-3069A

Dynamics
See Fluid dynamics
Hydrodynamics
Kinetics

Economics
An Investigation of Carbonaceous Materials Reducing Ferric Ions in Aqueous Solution. 709-717B

Efficiency
See Current efficiency

Elastic anisotropy
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A

Elastic constants
See also Elastic anisotropy
Modulus of elasticity

Elastic constants, Heating effects
Elastic Properties of β-Uranium and the Martensitic α'-Phase in Uranium—Gallium Alloys. 909-913A

Elastic modulus
See Modulus of elasticity

Elastic properties
See Elastic constants

Electric arc melting
See Vacuum arc melting

Electric arc welding
See Arc welding

Electric assemblies
See Electric devices

Electric components
See Electric devices

Electric conductors (materials)
See Electrolytes
Superconductors

Electric connectors, Mechanical properties
Cyclic Deformation and Fracture in Pb—Sn Solid Solution Alloy. 1533-1546A

Electric devices, Service life
*Inhibition of Cyclic Grain Boundary Migration Through Cellu*lar Precipitation in Pb—5% Sn Alloy. 2355-2359A

Electric motors
Analytical Electron Microscopy of Internally Oxidized Low Si—Al Steel. 953-959A

Electric potential
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load *in Notched Rupture Tests.* 863-871A

Electric power generation
See Nuclear power generation

Electric welding
See Arc welding
Gas tungsten arc welding
Projection welding
Shielded arc welding
Shielded metal arc welding

Electrical conductivity
See Resistivity

Electrical phenomena
See Electric potential

Electrical properties
See Dielectric constant
Resistivity

Electrical resistivity
See Resistivity

Electrical steels, Oxidation
Analytical Electron Microscopy of Internally Oxidized Low Si—Al Steel. 953-959A

Electrochemistry
Predicting the Kinetics of Hydrogen Generation at the Tips of *Corrosion Fatigue Cracks.* 1795-1806A

Electrocoatings
See Electroplates

Electrodeposition
Coating of Graphite Fibers With Tungsten Carbide Using Solid and Liquid Copper as a Transfer Medium. 2109-2113A

Electrolysis
See Electrowinning
Hall Heroult process

Electrolytes
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B
An Investigation of Carbonaceous Materials Reducing Ferric Ions in Aqueous Solution. 709-717B

Electrolytes, Electrical properties
Electrical Conductivity of Acidic Chloride Solutions. 53-58B

Electrolytic deposition
See Electrodeposition

Electrolytic dissolution
See Anodic dissolution

Electrolytic pickling
See Pickling

Electromagnetic fields
*Observations on the Dynamics of Electromagnetically Levi-*tated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A

Electromagnetic induction
Mathematical Modeling of Meniscus Profile and Melt Flow in Electromagnetic Casters. 397-408B

Electromagnetic stirring
*On the Flow Criteria for Suspending Solid Particles in Induc-*tively Stirred Melts. I. Newtonian Behavior. 557-562B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. I. Theory and Experiments With Cold Models. 581-593B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow *Fields in Billets, Blooms, and Slabs of Steel.* 595-602B
Experimental Measurement and Numerical Computation of Velocity and Turbulence Parameters in a Heated Liquid Metal System. 765-775B

Electromotive force
See Electric potential

Electron beams
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. 493-503B

Electron diffraction
Electron Diffraction Study of α- and α_T-AlFeSi. 893-898A

Electron microscopy
See also Transmission electron microscopy
Low Temperature Electron Microscopy on the Cubic-Tetragonal Transformation of V_3Si. 797-801A
Analytical Electron Microscopy of Internally Oxidized Low Si—Al Steel. 953-959A

Electron-phonon interactions
*Electron—Phonon Based Local Mode Descriptions of Displa-*cive Transformations. 177-183A

Electron spectroscopy
See Auger electron spectroscopy

Electronic assemblies
See Electric devices

Electronic components
See Electric devices

Electronic devices
See Electric devices

Electroplates, Mechanical properties
Pulsed Electrodeposition of Layered Brass Structures. 1569-1573A

Electropotential
See Electric potential

Electroreduction
See Electrowinning

Electrorefining
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B

Electrowinning
See also Hall Heroult process
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B
Electrical Conductivity of Acidic Chloride Solutions. 53-58B
Direct Electrowinning of Lead From Suspension Galena Concentrate Anode in Different Electrolytes. 59-65B
Bed Performance in the Direct Electrowinning of Lead From Suspension Galena Anodes. 67-72B
The Behavior of Thiourea and Flotation Reagents in Zinc Electrowinning Circuits. 187-199B
On the Solubility of Aluminum in Cryolitic Melts. 449-457B
An Investigation of Carbonaceous Materials Reducing Ferric Ions in Aqueous Solution. 709-717B
An Electrochemical Study of the Surface Oxidation of Arsenopyrite in Alkaline Media. 943-949B

Electrowinning, Impurity effects
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. 823-830B

Elevated temperature
See High temperature

Ellipsometers
See Polarimeters

Elongation
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A

Elongation, Alloying effects
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A

Elongation, Composition effects
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A

Elongation, Deformation effects
Effect of the Thermomechanical Treatments on Size and Distribution of Silicides and Tensile Properties of Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 389-391A

Elongation, Diffusion effects
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A

Elongation, Heating effects
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A

Elongation, Microstructural effects
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A

Elongation, Stress effects
The Mechanical Properties of the Superplastic Al—33Cu Eutectic Alloy. 2487-2496A

Elongation, Temperature effects
Tensile and Impact Properties Changes of Hastelloy X After Exposure in High-Temperature Helium Environment. 1269-1275A

Embrittlement
See also Hydrogen embrittlement
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A

Embrittlement, Composition effects
The Effect of Tin, Aluminum, and Nitrogen on the Hot Ductility of a Carbon—Manganese Steel Between 700-1200°C. 1305-1309A

Embrittlement, Heating effects
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni β Phase Alloys. 1761-1766A

Emission
See Acoustic emission

Emissivity
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Endurance (testing)
See Fatigue tests

Energy
See Activation energy
Free energy
Free energy of formation
Free energy of solution
Heat of activation
Heat of formation
Heat of mixing
Heat of reaction
Heat of solution
Stacking fault energy
Surface energy

Energy conservation
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B
Energy Cost Minimization in Grate/Kiln Induration. 123-132B
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

Energy consumption
See also Fuel consumption
Bed Performance in the Direct Electrowinning of Lead From Suspension Galena Anodes. 67-72B

Energy of activation
See Activation energy

Energy of dissociation
See Free energy of formation

Energy of formation
See Free energy of formation

Energy of fracture
See Toughness

Energy of solution
See Free energy of solution

Energy storage
See Hydrogen storage

Engineering
See Technology transfer

Enrichment
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A

Enthalpy
Discussion of "Physical Chemistry of Gas Liquid Solder Reactions" and Reply. 513-514B
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. 1827-1831A
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Enthalpy, Cooling effects
Enthalpies of a Binary Alloy During Solidification. 3057-3061A

Entropy
See also Entropy of solution
On the Slopes of Phase Boundaries. 1819-1825A

Entropy of solution
The Solubility of Hydrogen in Liquid Binary Al—Li Alloys. 227-232B

Environment
See Marine environments
Space environment

Epitaxial growth, Field effects
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A

Equiaxed structure, Cooling effects
Dendritic Solidification in Binary Alloys. 3087-3096A

Equiaxed structure, Field effects
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Equilibrium diagrams
See Phase diagrams

Erosion rate, Composition effects
Erosion of Fiber Reinforced Al—4% Cu Composites. 1785-1793A

Eutectic composition, Alloying effects
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. II. Mechanisms. 1965-1971A

Eutectic reactions
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A

Eutectics
See also Directionally solidified eutectics

Eutectics, Directional solidification
Eutectic Growth: Selection of Interlamellar Spacings. 2955-2964A

Eutectics, Mechanical properties
The Mechanical Properties of the Superplastic Al—33Cu Eutectic Alloy. 2487-2496A

Eutectics, Microstructure
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A

Eutectoid decomposition
Beta-Eutectoid Decomposition in Rapidly Solidified Titanium—Nickel Alloys. 23-33A

Eutectoid reactions
See also Eutectoid decomposition
The Kinetics of Ferrite Nucleation at Austenite Grain Boundaries in Fe—C Alloys. 427-440A

Eutectoids, Mechanical properties
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Exothermic reactions
See Silicothermic reactions

Exploding wires
Reactivity of Al—2.5% Li Alloy With Water as Studied by the Exploding Wire Technique. 255-259B

Explosions
Thermal Explosions Resulting From Fuel—Coolant Interactions: Analysis of Single Bubble Hydrodynamics. 563-570B

Exposure
Tensile and Impact Properties Changes of Hastelloy X After Exposure in High-Temperature Helium Environment. 1269-1275A

Extractive metallurgy
See also Hydrometallurgy
The Mathematical Modeling Revolution in Extractive Metallurgy. 525-540B

Extrusion
See Hot extrusion

Extrusion compacting
See Compacting

Face centered cubic metals
See FCC metals

Face centered orthorhombic lattice
See Orthorhombic lattice

Failure analysis
See Fractography

Fatigue (materials)
See also Corrosion fatigue
Fatigue life
Fatigue strength
Low cycle fatigue
Growth of Slip Bands During Fatigue of 6061-T6 Aluminum. 83-91A
Effect of Environment and Grain Size on Cyclic Deformation and Surface Hardening of Iron. 337-344A
Microstructural Observations in Cyclically Deformed Pb—Sn Solid Solution Alloy. 1437-1443A

Fatigue (materials), Environmental effects
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A

Fatigue (materials), High temperature effects
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A

Fatigue (materials), Microstructural effects
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A

Fatigue cracking
See Fatigue (materials)

Fatigue failure
Fatigue Crack Propagation in Aluminum—Lithium Alloy 2090. I. Long Crack Behavior. 549-561A
Fatigue Crack Propagation in Alumium—Lithium Alloy 2090. II. Small Crack Behavior. 563-569A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Isothermal Fatigue of Low Tin Lead Based Solder. 1051-1059A
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Fatigue failure, Environmental effects
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A

Fatigue failure, High temperature effects
Cyclic Deformation and Fracture in Pb—Sn Solid Solution Alloy. 1533-1546A

Fatigue failure, Microstructural effects
The Influence of Mo_2C Morphology and Distribution on the Fatigue Crack Initiation and Propagation Behavior of Fe—C—Mo Dual-Phase Steels. 973-986A
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

Fatigue failure, Temperature effects
The Thermal Activation Energy for Fatigue of Fe—1Cr—0.5Mo. 2979-2987A

Fatigue fracture
See Fatigue failure

Fatigue life
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A
Isothermal Fatigue of Low Tin Lead Based Solder. 1051-1059A
The Role of Hydrogen in Corrosion Fatigue of High Purity Al—Zn—Mg Exposed to Water Vapor. 1775-1783A
Inhibition of Cyclic Grain Boundary Migration Through Cellular Precipitation in Pb—5% Sn Alloy. 2355-2359A

Fatigue life, Microstructural effects
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Fatigue life, Temperature effects
Influence of Time and Temperature Dependent Processes on Strain Controlled Low Cycle Fatigue Behavior of Alloy 617. 359-371A

Fatigue properties
See Fatigue (materials)

Fatigue strength
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A

Fatigue strength, Heating effects
Fatigue Strength Improvement of Age-Hardened 18Ni Maraging Steel by Stress-Laser Surface Treatment of Subsequent Aging. 2603-2606A

Fatigue strength, Microstructural effects
Crack Initiation and Near-Threshold Surface Fatigue Crack Propagation Behavior of the Iron-Base Superalloy A-286. 301-308A
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

Fatigue tests
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A

FCC metals, Mechanical properties
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Ferric compounds
See Iron compounds

Ferrite, Crystal growth
Effect of Deformation on the Austenite-to-Ferrite Transformation in a Plain Carbon and Two Microalloyed Steels. 417-426A
The Kinetics of Ferrite Nucleation at Austenite Grain Boundaries in Fe—C Alloys. 427-440A

Ferrites
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B
The Evidence for a Miscibility Gap in the Fe_3O_4—$ZnFe_2O_4$ System—a Review. 919-925B

Ferrites, Reactions (chemical)
On the Interfacial Rate of Reaction of CO_2 With a Calcium Ferrite Melt. 959-965B

Ferritic stainless steels, Mechanical properties
Effects of Water Vapor on Hydrogen Induced Slow Crack Growth in Stainless Steels. 651-656A
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A

Ferromagnetic materials
See Magnetite

Ferrous alloys
See also Alloy steels
Cast iron
Steels

Ferrous alloys, Casting
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A

Ferrous alloys, Directional solidification
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A

Ferrous alloys, Mechanical properties
Crack Initiation and Near-Threshold Surface Fatigue Crack Propagation Behavior of the Iron-Base Superalloy A-286. 301-308A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Ferrous alloys, Microstructure
Discussion of "Microdistribution of Cerium in Steel" and Author's Reply. 723A
Measuring Creep Damage Using Microradiography. 837-845A
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A
Meteorites as Specimens for Microgravity Research. 1919-1923A
Grain Boundary Segregation of Sulfur and Antimony in Iron Alloys. 2005-2011A

Ferrous alloys, Oxidation
Rutherford Backscattering Study of High Temperature Oxidation of Melt-Spun Glassy Fe—22.5Al—10Zr. 2567-2573A

Ferrous alloys, Phase transformations
Electron Diffuse Scattering Studies of Premartensitic Alloys: β' Cu—Zn, β' Ni—Al, In—Tl, and Fe—Ni. 199-205A
Tweed Structures Associated With FCC—FCT Transformations in Fe—Pd Alloys. 803-810A
Coupled Growth Zone in Fe—18Cr—C Alloys. 1367-1369A

Ferrous alloys, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Ferrous alloys, Powder technology
Melting Metal Powder Particles in an Inductively Coupled R.F. Plasma Torch. 213-226B
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A
Formation of Ultra-Fine Amorphous Powders in Fe—M—B (M = Transition Metal) Systems by Chemical Reduction Method and Their Thermal and Magnetic Properties. 2315-2318A

Mechanical Alloying of Brittle Materials. 2867-2874A
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet Prepared via Rapid Solidification and Hot Extrusion Techniques. 3109-3112A

Ferrous alloys, Solubility
Thermodynamics of Nitrogen in $CaO—SiO_2—Al_2O_3$ Slags and Its Reaction With $Fe—C_{sat.}$ Melts. 419-425B

Ferrous alloys, Sorption
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B

Ferrous alloys, Structural hardening
Coarsening and Morphology of β' Particles in Fe—Ni—Al—Mo Ferritic Alloys. 1135-1146A
On the Morphology of the Modulated Precipitation of Extended Multiplets and Fe_9C_4 Epsilon or Eta Carbide Obtained by Aging and Tempering in Fe—C Martensite. 2901-2909A

Ferrous alloys, Surface properties
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B
Surface Segregation in MCrAlY Alloys. 2099-2108A

Ferrous alloys, Welding
An Analytical Electron Microscope Investigation of the Phase Transformations in a Simulated Heat-Affected Zone in Alloy 800. 35-50A
Consolidation of Metallic Glass Ribbons Using Electric Discharge Welding. 1634-1638A

Ferrous compounds
See Iron compounds

Ferrous metals
See Ferrous alloys

Fiber composites
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Fiber composites, Crystal growth
Columnar Dendritic Solidification in a Metal-Matrix Composite. 709-721A

Fiber composites, Mechanical properties
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A
A Computer Simulation on Tensile Strength of Metal Matrix Composites Reinforced With Surface-Damaged Fibers. 1491-1497A
A Computer Simulation on Tensile Strength of Surface-Damaged Fibers. 1499-1506A
Erosion of Fiber Reinforced Al—4% Cu Composites. 1785-1793A

Fiber metallurgy
See Mechanical alloying

Fibers
See also Carbon fibers
Whiskers (metals)

Fibers, Mechanical properties
A Computer Simulation on Tensile Strength of Surface-Damaged Fibers. 1499-1506A

Fields (physics)
See Electromagnetic fields

Films
See Thin films

Finish rolling
Evaluation of the Fracture Toughness of Hot-Rolled Low-Alloy Ti—V Plate Steel. 505-516A

Finishing
See Descaling

Finite element method
Creep Crack Growth Simulation Under Transient Stress Fields. 829-835A
Effect of Temperature and Strain Distribution on Martensitic Transformation During Uniaxial Testing of AISI-304 Stainless Steel. 1021-1026A
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A
A Finite Element Model of a Persistent Slip Band Based Upon Electron Microscopic Evidence. 2457-2465A
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Flakes, Phase transformations
Beta-Eutectoid Decomposition in Rapidly Solidified Titanium—Nickel Alloys. 23-33A

Flame descaling
See Descaling

Flash smelting
Oxidation of Molten Copper Matte. 47-52B
Process Mineralogy of Suspended Particles From a Simulated Commercial Flash Smelter. 719-729B
The Trajectories and Distribution of Particles in a Turbulent Axisymmetric Gas Jet Injected Into a Flash Furnace Shaft. 871-884B

Flaw detection
See Ultrasonic testing

Flaws
See Defects

Flexural vibration
See Fatigue (materials)

Flotation
Mineralogical Characterization of Silver Flotation Concentrates Made From Zinc Neutral Leach Residues. 803-817B

Flow
See Fluid flow
Gas flow
Liquid flow

Flow measurement
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A

Flow stress
See Yield strength

Fluid bed roasting
See Fluidized bed roasting

Fluid dynamics
See also Hydrodynamics
Fluid Dynamics in Bubble Stirred Ladles. I. Experiments. 745-754B
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B
Experimental Study of Thermocapillary Flows in a Thin Liquid Layer With Heat Fluxes Imposed on the Free Surface. 1895-1898A
The Bubble, Drop, and Particle Unit (BDPU). 1925-1929A

Fluid flow
See also Gas flow
Liquid flow
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B

Fluid mechanics
See also Fluid dynamics
Hydrodynamics
Fluid Dynamics in Channel Reactors Stirred by Submerged Gas Injection. 603-612B

Fluidity
See Viscosity

Fluidized bed roasting
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B

Fluorine
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B

Fluosolids roasting
See Fluidized bed roasting

Focussons
See Displacements (lattice)

Force
See Cyclic loads

Forehearths
See Holding furnaces

Formability
Effect of Geometrical Defects in Forming Sheet Steel by Biaxial Stretching. 2067-2074A

Formability, Anisotropy
The Variation of Plastic Anisotropy During Straining. 2805-2817A

Formability, Microstructural effects
The Effect of Grain Size on the Bulk Formability and Tensile Properties of Austenitic Stainless Steel Types 304 and 316. 2287-2298A

Forming
See Bending
Bulging
Finish rolling
Hot extrusion
Hot isostatic pressing
Hot pressing
Hot rolling
Press forming
Stamping
Stretch forming
Thermomechanical treatment

Forms (molds)
See Molds

Fractography
Quantitative Fractography: a Modern Perspective. 961-971A
Stage I Corrosion Fatigue Crack Crystallography in Austenitic Stainless Steel (316L). 2765-2773A

Fracture mechanics
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B
Fatigue Crack Propagation in Aluminum—Lithium Alloy 2090. I. Long Crack Behavior. 549-561A
Fatigue Crack Propagation in Alumium—Lithium Alloy 2090. II. Small Crack Behavior. 563-569A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
Quantitative Fractography: a Modern Perspective. 961-971A
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A
Isothermal Fatigue of Low Tin Lead Based Solder. 1051-1059A
Corrosion Fatigue Crack Initiation in a Mode II Notch Specimen. 1067-1073A
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A

Fracture mechanics, Microstructural effects
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Fracture strength, Alloying effects
A Preliminary Study of the Influence of Separate and Combined Aluminum and Nickel Additions on the Properties of a Secondary Hardening Steel. 3103-3107A

Fracture strength, Microstructural effects
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Fracture strength, Stress effects
Test Temperature and Strain Rate Effects on the Properties of a Tungsten Heavy Alloy. 487-494A

Fracture toughness
Fatigue Crack Propagation in Aluminum—Lithium Alloy 2090. I. Long Crack Behavior. 549-561A
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A

Fracture toughness, Alloying effects
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A

Fracture toughness, Cryogenic effects
Cleavage-Like Fracture Along Slip Planes in Fe—18Cr—3Ni—13Mn—0.37N Austenitic Stainless Steel at Liquid Helium Temperature. 1626-1631A

Fracture toughness, Deformation effects
Evaluation of the Fracture Toughness of Hot-Rolled Low-Alloy Ti—V Plate Steel. 505-516A
Effect of Hot-Rolling Reduction on Shape of Sulfide Inclusions and Fracture Toughness of AISI 4340 Ultrahigh Strength Steel. 1555-1561A

Fracture toughness, Heating effects
The Effect of Austenitizing Temperature on the Fracture Initiation Toughness of As-Quenched HP9-4-20 Steel. 2989-3003A
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. 3035-3044A

Fracture toughness, Impurity effects
Clean Steels for Steam Turbine Rotors—Their Stress Corrosion Cracking Resistance. 1583-1596A

Fracture toughness, Microstructural effects
Microstructure and Fracture Toughness of the Aged β-Ti Alloy Ti—10V—2Fe—3Al. 1037-1049A
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni β Phase Alloys. 1761-1766A
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A
The Effect of Matrix Strength on the Fracture Resistance of an Alpha—Beta Titanium Alloy, Corona-5. 2503-2512A
Effect of Microstructure on Plane-Strain Fracture Toughness of AISI 4340 Steel. 2513-2521A

Fracturing
See also Brittle fracture
Ductile fracture
Intergranular fracture
Transgranular fracture

Fracturing, Microstructural effects
Effects of Transformed Ferrite Growth on the Tensile Fracture Characteristics of a Dual-Phase Steel. 309-317A

Free energy
See also Activation energy
Free energy of formation
Free energy of solution
Stacking fault energy
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Free energy of activation
See Activation energy

Free energy of dissociation
See Free energy of formation

Free energy of formation
Equilibria Between the Rare Earth Elements, Oxygen and Sulfur, in Molten Iron. 409-418B
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B
High Temperature Thermodynamics of the Cr—Cr_2N—N_2 System. 471-476B
Standard Gibbs Energies of Formation of the Carbides of Manganese by EMF Measurements. 951-957B
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A
Gibbs Free Energy of Formation of Cementite, Fe_3C. 2115-2117A

Free energy of solution
Volume Effects and Associations in Liquid Alloys. 465-470B

Freezing points
See Melting points

Friction
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A

Fuel consumption
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B

Fuel elements
See Nuclear fuel elements

Fuming (slag)
See Slag fuming

Furnaces
See Converters
Holding furnaces
Kilns
Smelting furnaces

Fused baths (metals)
See Metal baths

Fused salt electrolysis
See Hall Heroult process

Fusion welding
See Arc welding
Gas tungsten arc welding
Laser beam welding
Shielded arc welding
Shielded metal arc welding

Galena, Recovering
Kinetics of Nonoxidative Leaching of Galena in Perchloric, Hydrobromic, and Hydrochloric Acid Solutions. 541-546B

Galena, Reduction (electrolytic)
Direct Electrowinning of Lead From Suspension Galena Concentrate Anode in Different Electrolytes. 59-65B
Bed Performance in the Direct Electrowinning of Lead From Suspension Galena Anodes. 67-72B

Gallium, Alloying elements
Elastic Properties of β-Uranium and the Martensitic α'-Phase in Uranium—Gallium Alloys. 909-913A

Gallium, Diffusion
Prediction of Solute Diffusion Coefficients in Liquid Metals. 273-279A

Gallium base alloys, Directional solidification
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Galvanized steels, Coating
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. II. Surface Composition of Chromated Sheet. 1609-1616A

Galvanizing
See Hot dip galvanizing

Galvannealing
See Annealing

Gas flow
Characterization of Two-Phase Axisymmetric Plume in a Gas Stirred Liquid Bath—a Water Model Study. 885-892B

Gas permeability
See Permeability

Gas tungsten arc welding
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A
Welding Parameters and the Grain Structure of Weld Metal—a Thermodynamic Consideration. 1075-1082A

Gas turbines, Microstructure
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Germanium, Alloying additive
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A

Germanium, Binary systems
Mass Spectrometric Study of the Activities of the Fe—Ge System at 1550°C. 511-513B

Germanium, Ternary systems
Experimental and Calculated Ag + Au + Ge Phase Diagram. 409-416A
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Gibbs free energy
See Free energy

Glass
See Metallic glasses

Glass transition temperature
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A

Gold, Alloying elements
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A

Gold, Extraction
An Electrochemical Study of the Surface Oxidation of Arsenopyrite in Alkaline Media. 943-949B

Gold, Ternary systems
Experimental and Calculated Ag + Au + Ge Phase Diagram. 409-416A
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Gold, Thermal properties
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Gold base alloys, Phase transformations
X-Ray Study of the Premartensitic Phenomena in AuCd. 265-271A

Gold silver alloy plating
See Alloy plating

GP zone
See Guinier Preston zone

Grain boundaries
Grain Boundary Segregation in the Nickel-Base Alloy 182. 137-143A
Grain Boundary Segregation in Austenitic Stainless Steels and Its Effect on Intergranular Corrosion and Stress Corrosion Cracking. 495-504A
The Precipitation Behavior of a Zr—2.5 wt.% Nb Alloy. 1153-1162A
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A
Grain Boundary Segregation of Sulfur and Antimony in Iron Alloys. 2005-2011A
Calculation of the Product Phase Grain Boundary Area During Solid State Transformations. 2123-2131A

Grain boundaries, Impurity effects
The Influence of Boron on the Grain Boundary Chemistry and Microstructure of Ni—16Cr—9Fe—0.03C. 2555-2566A

Grain boundaries, Microstructure
Structure of a Small Angle Tilt Grain Boundary in Zinc. 2359-2363A

Grain boundary migration
A Topological Study of Superplastic Deformation in an Al—Li Alloy With a Bimodal Grain Size Distribution. 1621-1624A
Inhibition of Cyclic Grain Boundary Migration Through Cellular Precipitation in Pb—5% Sn Alloy. 2355-2359A
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Grain boundary migration, Deformation effects
Microstructural Observations in Cyclically Deformed Pb—Sn Solid Solution Alloy. 1437-1443A

Grain boundary migration, Heating effects
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy. 1667-1675A

Grain boundary migration, High temperature effects
Cyclic Deformation and Fracture in Pb—Sn Solid Solution Alloy. 1533-1546A

Grain growth
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A
Ostwald Ripening in a System With a High Volume Fraction of Coarsening Phase. 2713-2721A
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. 2931-2936A

Grain growth, Size effects
Calculation of the Product Phase Grain Boundary Area During Solid State Transformations. 2123-2131A

Grain orientation
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A
Intercrystalline Structure Distribution in Polycrystalline Materials. 2611A

Grain refinement
Discussion of "The Role of Boron in the Grain Refinement of Aluminum With Titanium" and Authors' Reply. 385-387A
Modeling of Thermomechanical Processing of Heat-Treatable Aluminum Alloys. 617-625A

Grain refinement, Alloying effects
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Grain size
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
The Strength of Ni_3Al Containing Titanium and Boron. 732-733A
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A
Grain Shape and Its Influence on the Experimental Measurement of Grain Size. 933-940A
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Calculation of the Product Phase Grain Boundary Area During Solid State Transformations. 2123-2131A
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A
The Effect of Grain Size on the Bulk Formability and Tensile Properties of Austenitic Stainless Steel Types 304 and 316. 2287-2298A
Near-Threshold Fatigue Crack Growth in Copper and Alpha-Brass: Grain-Size and Environmental Effects. 2575-2587A
Thermodynamics and Kinetics of $\delta \rightarrow \alpha$ Martensitic Transformation in Plutonium Alloys. 2705-2711A
Ostwald Ripening in a System With a High Volume Fraction of Coarsening Phase. 2713-2721A
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A
Statistical Considerations on Uniform Grain Size. 2937-2944A

Grain size, Deformation effects
Modeling of Thermomechanical Processing of Heat-Treatable Aluminum Alloys. 617-625A

Grain size, Heating effects
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A

Grain structure
The Evolution of Microcrystalline Structures in Supercooled Metal Powders. 699-708A
Grain Shape and Its Influence on the Experimental Measurement of Grain Size. 933-940A

Grain structure, Welding effects
Welding Parameters and the Grain Structure of Weld Metal—a Thermodynamic Consideration. 1075-1082A

Graphite, Coating
Coating of Graphite Fibers With Tungsten Carbide Using Solid and Liquid Copper as a Transfer Medium. 2109-2113A

Graphite, Composite materials
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A

Graphite, Reactions (chemical)
Dissolution Kinetics of Particulate Graphite Injected Into Iron/Carbon Melts. 375-382B

Gravitation
Containment of a Silicone Fluid Free Surface in Reduced Gravity. 1883-1888A
Experimental Study of Thermocapillary Flows in a Thin Liquid Layer With Heat Fluxes Imposed on the Free Surface. 1895-1896A
Directional Solidification of Al—Ni/SiC Composites During Parabolic Trajectories. 1899-1904A
Gravity and Configurational Energy Induced Microstructural Changes in Liquid Phase Sintering. 1905-1913A
Ground-Based Microgravity Materials Science Research at NASA's Microgravity Materials Science Laboratory. 1915-1917A
The Bubble, Drop, and Particle Unit (BDPU). 1925-1929A
Mixing Fuel Particles for Space Combustion Research Using Acoustics. 1931-1937A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A
Making Acceleration Data More Accessible and Useful to Microgravity Investigators. 2631-2637A

Gravity
See Gravitation

Gray cast iron
See Gray iron

Gray iron
See also Nodular iron

Gray iron, Phase transformations
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. II. Mechanisms. 1965-1971A

Grey iron
See Gray iron

Growth
See Crystal growth
Epitaxial growth
Grain growth
Growth rate

Growth rate
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A
Coupled Growth Zone in Fe—18Cr—C Alloys. 1367-1369A
Fractal Analysis of a Nucleation and Growth Process. 1371-1372A

Guinier Preston zone
Growth and Coarsening of G.P. Zones in Al—Zn Alloys. 1973-1980A
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched and Solid-Quenched Alloys. 2433-2443A

Guinier Preston zone, Heating effects
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A

Hafnium, Alloying elements
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Hafnium base alloys, Phase transformations
Simple Models for the Omega Phase Transformation. 169-175A

Hafnium compounds, Thermal properties
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. 1827-1831A

Halides
See Chlorides

Hall Heroult process
The Moreau—Evans Hydrodynamic Model Applied to Actual Hall—Héroult Cells. 737-744B

Halogenation
See Chlorination

Halogens
See Fluorine
Iodine

Hardenability, Alloying effects
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A

Hardening
See Aging (artificial)
Laser beam hardening
Precipitation hardening
Quench hardening
Strain hardening
Structural hardening
Surface hardening

Hardness
See also Diamond pyramid hardness
Microhardness
On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, 5456, and 5086. 319-329B

Hardness, Composition effects
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A
Effects of Oxygen and Heat Treatment on the Mechanical Properties of Alpha and Beta Titanium Alloys. 527-542A

Hardness, Diffusion effects
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A

Hardness, Heating effects
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
The Tempering of Iron—Carbon Martensite; Dilatometric and Calorimetric Analysis. 2415-2426A

Hardness, Microstructural effects
Effect of Microstructure on Fracture Behavior of Complex Structure in 6Ni—0.3C Steel. 2606-2611A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Hardness tests
Characterization of the Aging Response of a Melt-Spun Al—Be—Li Alloy Ribbon. 1173-1178A

Hazelett process
See Continuous casting

Heat affected zone, Corrosion
Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A

Heat affected zone, Mechanical properties
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. 2305-2313A

Heat affected zone, Microstructure
An Analytical Electron Microscope Investigation of the Phase Transformations in a Simulated Heat-Affected Zone in Alloy 800. 35-50A

Heat flow
See Heat transmission

Heat flux
See Heat transmission

Heat of activation
Nonlinear and Nonlocal Continuum Model of Transformation Precursors in Martensites. 761-775A

Heat of combination
See Heat of reaction

Heat of decomposition
See Heat of formation

Heat of dissociation
See Heat of formation

Heat of dissolution
See Heat of solution

Heat of formation
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A

Heat of hydrogenation
See Heat of reaction

Heat of isomerization
See Heat of reaction

Heat of mixing
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Heat of neutralization
See Heat of reaction

Heat of reaction
Discussion of "Physical Chemistry of Gas Liquid Solder Reactions" and Reply. 513-514B

Heat of solution
The Effect of Temperature on Nickel Solubility in Silica Saturated Fayalite Slags From 1523-1623K. 243-247B
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Heat resistant alloys
See Superalloys

Heat transfer
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B

Heat transmission
Performance Analysis of the Aluminum Casting Furnace. 171-180B

Heat treatment
See also Aging (artificial)
Annealing
Austempering
Austenitizing
Bright annealing
Grain refinement
Precipitation hardening
Precipitation heat treatment
Quench aging
Quench hardening
Solution heat treatment
Tempering
Assessment of Service Induced Microstructural Damage and its Rejuvenation in Turbine Blades. 2049-2066A

Heating
See Laser beam heating

Heats (energies)
See Heat of activation
Heat of formation
Heat of mixing
Heat of reaction
Heat of solution

Heavy metals
See Antimony
Bismuth
Lead (metal)
Mercury (metal)
Thallium
Tin

Heliarc welding
See Gas tungsten arc welding

Helium, Environment
Tensile and Impact Properties Changes of Hastelloy X After Exposure in High-Temperature Helium Environment. 1269-1275A

Helium, Impurities
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A

Helmholtz free energy
See Free energy

Hematite, Reduction (chemical)
Hematite Single Crystal Reduction Into Magnetite With CO—CO_2. 311-317B

High alloy steels
See Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels
Maraging steels
Stainless steels

High energy milling
See Mechanical alloying

High speed tool steels, Alloy development
Niobium-Alloyed High Speed Steel by Powder Metallurgy. 1395-1401A

High speed tool steels, Casting
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

High speed tool steels, Heat treatment
Laser Melting of T1-High Speed Tool Steel. 377-382A

High speed tool steels, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

High strength low alloy steels, Corrosion
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A

High strength low alloy steels, Forming
Effect of Geometrical Defects in Forming Sheet Steel by Biaxial Stretching. 2067-2074A

High strength low alloy steels, Heat treatment
Intercritical Annealing as a Means of Improving Impact Properties of Plate Steel. 1481-1490A

High strength low alloy steels, Magnetic properties
Analytical Electron Microscopy of Internally Oxidized Mn—P Steel. 1876-1878A

High strength low alloy steels, Mechanical properties
Evaluation of the Fracture Toughness of Hot-Rolled Low-Alloy Ti—V Plate Steel. 505-516A
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

High strength low alloy steels, Phase transformations
Effect of Deformation on the Austenite-to-Ferrite Transformation in a Plain Carbon and Two Microalloyed Steels. 417-426A

High strength low alloy steels, Structural hardening
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A

High strength steels, Corrosion
Discussion of "Sulfide Stress Cracking Susceptibility of Nickel Containing Steels" and Authors' Reply. 153A

High strength steels, Mechanical properties
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

The Effect of Austenitizing Temperature on the Fracture Initiation Toughness of As-Quenched HP9-4-20 Steel. 2989-3003A

High temperature
Thermodynamic Activity of Na_2O in Na_2O—CaO—SiO_2, Na_2O—MgO—SiO_2, and Na_2O—CaO—SiO_2—Al_2O_3 Melts at 1400°C. 655-661B

HIP
See Hot isostatic pressing

Holding furnaces
Performance Analysis of the Aluminum Casting Furnace. 171-180B

Horizontal continuous casting
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B

Hot brittleness
See Brittleness

Hot compacting
See Compacting

Hot compression
See Hot pressing

Hot cracking
See Cracking (fracturing)

Hot cracking (welds)
See Weld defects

Hot deformation
See Deformation

Hot dip coating
See Hot dip galvanizing

Hot dip coatings, Microstructure
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. I. Surface Composition of As-Produced Sheet. 1603-1608A

Hot dip galvanizing
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. I. Surface Composition of As-Produced Sheet. 1603-1608A

Hot dipping
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Hot ductility
See Ductility

Hot extrusion
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet *Prepared via Rapid Solidification and Hot Extrusion Techniques.* 3109-3112A

Hot gas corrosion, Welding effects
Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A

Hot hardness
See Hardness

Hot isostatic pressing
Densification of Titanium Powder During Hot Isostatic Pressing. 1767-1773A
Densification of Oxide Superconductors by Hot Isostatic Pressing. 1841-1847A

Hot pressing
See also Hot isostatic pressing
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A

Hot rolling
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A
Effect of Hot-Rolling Reduction on Shape of Sulfide Inclusions and Fracture Toughness of AISI 4340 Ultrahigh Strength Steel. 1555-1561A
Microscopic Shear Localization in Nickel. 2041-2048A

Hot roughing
See Hot rolling

Hot shortness
See Brittleness

Hot strength
See Tensile strength

Hot stretch forming
See Stretch forming

Hot tensile strength
See Tensile strength

Hot work tool steels, Alloy development
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A

Hot working
See Hot extrusion
Hot rolling

Hydrides
The Influence of Hydride Size and Matrix Strength on Fracture Initiation at Hydrides in Zirconium Alloys. 1507-1522A

Hydrodynamics
Thermal Explosions Resulting From Fuel—Coolant Interactions: Analysis of Single Bubble Hydrodynamics. 563-570B
The Moreau—Evans Hydrodynamic Model Applied to Actual Hall—Héroult Cells. 737-744B

Hydrogen
See also Deuterium
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Hydrogen, Diffusion
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A
Nature of the γ and γ' Phases in Austenitic Stainless Steels Cathodically Charged With Hydrogen. 723-730A
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A
Experimental Study of Hydrogen Transport During Plastic Deformation in Iron. 2789-2798A

Hydrogen, Environment
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A

Hydrogen, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A
Hydrogen in Iron. 2371-2387A

Hydrogen, Solubility
Solubility and Diffusion of Hydrogen in Vanadium—Oxygen Alloys. 67-72A
The Solubility of Hydrogen in Liquid Binary Al—Li Alloys. 227-232B

Hydrogen, Sorption
Kinetics of Hydrogen Absorption in Alpha Titanium. 1425-1427A

Hydrogen compounds
See Inorganic acids

Hydrogen embrittlement
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A
Cracking Kinetics of Two-Phase Stainless Steel Alloys in Hydrogen Gas. 145-152A
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type $Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound. 353-357A
Detection of the Initiation and Growth of Hydrogen-Induced Cracks in Armco Iron Using Continuous Modulus Measurements. 473-478A
Effects of Water Vapor on Hydrogen Induced Slow Crack Growth in Stainless Steels. 651-656A
The Influence of Hydride Size and Matrix Strength on Fracture Initiation at Hydrides in Zirconium Alloys. 1507-1522A
Mechanistic Similarities Between Hydrogen and Temperature Effects on the Ductile-to-Brittle Transition of a Stainless Steel. 1547-1553A
The Role of Hydrogen in Corrosion Fatigue of High Purity Al—Zn—Mg Exposed to Water Vapor. 1775-1783A
Determination of Fracture Initiation in Hydride Blisters Using *Acoustic Emission.* 2247-2257A
Effect of Cathodic Charging on the Mechanical Properties of Aluminum. 2299-2304A
The Role of Dislocations During Transport of Hydrogen in Hydrogen Embrittlement of Iron. 2799-2803A

Hydrogen embrittlement, Microstructural effects
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

Hydrogen reduction
Reducibility of Laterite Ores. 181-186B

Hydrogen storage
Kinetics of Hydrogen Absorption in Alpha Titanium. 1425-1427A

Hydrogenation
Corrosion Fatigue Crack Initiation in a Mode II Notch Specimen. 1067-1073A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A

Hydromechanics
See Hydrodynamics

Hydrometallurgy
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

I R drop
See Electric potential

Immersion coating
See Hot dip galvanizing

Immersion testing (ultrasonic)
See Ultrasonic testing

Impact strength
Tensile and Impact Properties Changes of Hastelloy X After *Exposure in High-Temperature Helium Environment.* 1269-1275A
Mechanistic Similarities Between Hydrogen and Temperature Effects on the Ductile-to-Brittle Transition of a Stainless Steel. 1547-1553A

Impact strength, Alloying effects
A Preliminary Study of the Influence of Separate and Combined Aluminum and Nickel Additions on the Properties of a Secondary Hardening Steel. 3103-3107A

Impact strength, Deformation effects
Effect of Hot-Rolling Reduction on Shape of Sulfide Inclusions and Fracture Toughness of AISI 4340 Ultrahigh Strength Steel. 1555-1561A

Impact strength, Heating effects
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
Intercritical Annealing as a Means of Improving Impact Properties of Plate Steel. 1481-1490A
The Effect of Austenitizing Temperature on the Fracture Initiation Toughness of As-Quenched HP9-4-20 Steel. 2989-3003A

Impact strength, Microstructural effects
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A
Effect of Microstructure on Fracture Behavior of Complex Structure in 6Ni—0.3C Steel. 2606-2611A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Impact toughness
See Impact strength

Imperfections
See Defects

Impermeability
See Permeability

In situ leaching
Study by SEM-EDS of the In Situ Dynamic Leaching of Mercury Ores. 165-170B

Incineration
See Combustion

Inclusions
See Nonmetallic inclusions

Indium, Ternary systems
Phase Stability Relationships and Glass Formation in the System Cu—Ag—In. 13-21A

Indium base alloys, Phase transformations
Symmetry Aspects of Pretransformation Behavior in Metallic Alloys. 159-167A
Pretransformation Phenomena as Revealed by Elastic Waves. 185-191A
Neutron Scattering Studies of Premartensitic Indium—Thallium Alloys. 193-198A
Electron Diffuse Scattering Studies of Premartensitic Alloys: β' Cu—Zn, β' Ni—Al, In—Ti, and Fe—Ni. 199-205A
Nonlinear and Nonlocal Continuum Model of Transformation *Precursors in Martensites.* *761-775A*
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A

Induction (electromagnetic)
See Electromagnetic induction

Inert gas welding
See Gas tungsten arc welding

Infiltration
Modeling of Infiltration Kinetics for Liquid Metal Processing of Composites. 95-101B

Ingots, Directional solidification
Channel Formation in Pb—Sn, Pb—Sb, and Pb—Sn—Sb Alloy Ingots and Comparison With the System NH_4Cl—H_2O. *1861-1871A*

Ingots, Mechanical properties
Investigation of Panel Crack Formation in Steel Ingots. I. *Mathematical Analysis and Mid-Face Panel Cracks.* *277-287B*
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B

Initiation
See Crack initiation

Inorganic acids, Reactions (chemical)
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B

Instability
See Stability

Intensity
See Stress intensity

Intercrystalline structure
See Intergranular structure

Interface reactions
On the Interfacial Rate of Reaction of CO_2 With a Calcium Ferrite Melt. 959-965B
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Interface reactions, Coating effects
Evaluation of *High-Temperature Diffusion Barriers for the* Pt—Mo System. 2163-2170A

Interfaces
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A
Fluid Oscillation in the Drop Tower. 2625-2630A
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. 2847-2855A
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Interfaces, Mechanical properties
A Computer Simulation on Tensile Strength of Metal Matrix Composites Reinforced With Surface-Damaged Fibers. 1491-1497A

Interfacial energy
See Surface energy

Interfacial surface tension
See Surface tension

Intergranular corrosion, Alloying effects
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A

Intergranular corrosion, Diffusion effects
Grain Boundary Segregation in Austenitic Stainless Steels and Its Effect on Intergranular Corrosion and Stress Corrosion Cracking. 495-504A

Intergranular corrosion, Heating effects
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A

Intergranular corrosion, Impurity effects
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A

Intergranular fracture
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A

Intergranular fracture, Alloying effects
Effect of Antimony on the Creep Fracture of Stainless Steel. 571-577A

Intergranular precipitation
The Influence of Boron on the Grain Boundary Chemistry and Microstructure of Ni—16Cr—9Fe—0.03C. 2555-2566A

Intergranular structure
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A

Intergranular structure, Impurity effects
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A

Intermetallic compounds
See Intermetallics

Intermetallic phases
Simple Models for the Omega Phase Transformation. *169-175A*
Theoretical Investigation of the Precipitation of δ' in Al—Li. 249-258A

Intermetallic phases, Cooling effects
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A

Intermetallic phases, Crystal growth
Precipitation of the δ-Ni_3Nb Phase in Two Nickel Base Superalloys. 453-465A

Intermetallic phases, Phase transformations
Investigation of Phase Transformation in an Al—0.58 wt.% Fe Alloy by Mössbauer Spectroscopy. 259-264A

Intermetallics
See also A15 compounds
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched *and Solid-Quenched Alloys.* *2433-2443A*

Intermetallics, Crystal lattices
Microstructural Characterization of the Dispersed Phases in Al—Ce—Fe System. 1645-1656A
Effect of Rapid Solidification and Alloying Addition on Lattice Distortion and Atomic Ordering in $L1_0$ TiAl Alloys and Their *Ternary Alloys.* *2445-2455A*
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T₁ (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2685-2691B

Intermetallics, Phase transformations
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. 811-818A
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. *2723-2731A*
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. 2931-2936A

Intermetallics, Phases (state of matter)
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Intermetallics, Powder technology
Mechanical Alloying of Brittle Materials. 2867-2874A

Intermetallics, Thermal properties
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. *1827-1831A*

Internal friction
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A
Fluid Oscillation in the Drop Tower. *2625-2630A*

Internal oxidation
Analytical Electron Microscopy of Internally Oxidized Low *Si—Al Steel.* *953-959A*
Analytical Electron Microscopy of Internally Oxidized Mn—P Steel. 1876-1878A

Internal stress
See Residual stress

Iodine, Environment
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A

Ion beam mixing
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Ions
An Ionic Diffusion Mechanism of Chromite Reduction. 677-684B

Iron
See also Alloy steels
Cast iron
Gray iron
Nodular iron
White iron
Effect of Temperature on Magnetizing Reduction of Agbaja Iron Ore. 731-735B
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B

Iron, Binary systems
Mass Spectrometric Study of the Activities of the Fe—Ge System at 1550°C. 511-513B
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Iron, Corrosion
The Role of Dislocations During Transport of Hydrogen in Hydrogen Embrittlement of Iron. 2799-2803A

Iron, Crystal growth
Influence of Rare Earth Metals on the Nucleation and Solidification Behavior of Iron and 1045 Steel. 383-395B
The Nucleation of Iron on Dense Wustite: a Morphological Study. 787-802B

Iron, Diffusion
Experimental Study of Hydrogen Transport During Plastic Deformation in Iron. 2789-2798A

Iron, Extraction
Correlations of Electrical Conductivity to Slag Composition and Temperature. 133-140B
Reducibility of Laterite Ores. 181-186B

Iron, Mechanical properties
Effect of Environment and Grain Size on Cyclic Deformation and Surface Hardening of Iron. 337-344A
Detection of the Initiation and Growth of Hydrogen-Induced Cracks in Armco Iron Using Continuous Modulus Measurements. 473-478A
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A

Iron, Phase transformations
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. 811-818A
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A

Iron, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Iron, Powder technology
Kinetics of Neck Growth During Loose Stack Sintering. 2153-2161A

Iron, Quaternary systems
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Iron, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B
Dissolution Kinetics of Particulate Graphite Injected Into Iron/Carbon Melts. 375-382B
Equilibria Between the Rare Earth Elements, Oxygen and Sulfur, in Molten Iron. 409-418B
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Iron, Refining
Reaction Mechanism for the CaO—Al and CaO—CaF_2 Desulfurization of Carbon-Saturated Iron. 261-268B
The Calcium—Phosphorus and the Simultaneous Calcium—Oxygen and Calcium—Sulfur Equilibria in Liquid Iron. 617-622B

Iron, Sorption
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B

Iron, Ternary systems
The Influence of the Ternary Interaction Parameter ϵ_{Si}^{Fe} *on the Activity of Bismuth in Molten Copper.* 427-432B
A Thermodynamic Evaluation of the Fe—Cr—C System. 627-636A
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A
An Experimental Study and a Thermodynamic Evaluation of the Fe—Cr—Mo System. 1385-1394A
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Iron, Welding
Free Surface Flow and Heat Transfer in Conduction Mode Laser Welding. 851-858B
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B

Iron and steel making
See Oxygen steel making
Steel making

Iron base alloys
See Ferrous alloys

Iron compounds
See also Hematite
Iron oxides
Magnetite
Wustite

Iron compounds, Phase transformations
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. 2723-2731A
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. 2931-2936A

Iron compounds, Reactions (chemical)
Leaching of Manganese Nodule in Ammoniacal Medium Using Ferrous Sulfate as the Reductant. 331-334B

Iron ores
See also Hematite
Magnetite
A Dynamic Mathematical Model of the Complete Grate/Kiln Iron-Ore Pellet Induration Process. 103-112B
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B
Energy Cost Minimization in Grate/Kiln Induration. 123-132B

Iron ores, Beneficiation
Effect of Temperature on Magnetizing Reduction of Agbaja Iron Ore. 731-735B

Iron oxides
See also Hematite
Magnetite
Wustite

Iron oxides, Thermal properties
Thermal Explosions Resulting From Fuel—Coolant Interactions: Analysis of Single Bubble Hydrodynamics. 563-570B

Iron powder
See Iron

Irradiation damage
See Radiation damage

Isostatic pressing
See Hot isostatic pressing

Isothermal treatment
See Austempering

Jacks (electrical)
See Electric connectors

Joints
See Welded joints

Junghans Rossi casting
See Continuous casting

Kaldo process
See Oxygen steel making

Kikuchi lines
Electron Diffraction Study of α- and α_T-AlFeSi. 893-898A

Killed steels
See also Aluminum killed steels

Killed steels, Mechanical properties
Investigation of Panel Crack Formation in Steel Ingots. I. Mathematical Analysis and Mid-Face Panel Cracks. 277-287B

Kilns
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B

Kinetics
See also Reaction kinetics
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—Chromium Alloys With Argon. 233-242B
The Kinetics of Ferrite Nucleation at Austenite Grain Boundaries in Fe—C Alloys. 427-440A
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Ladle metallurgy
Possible Roles of Upper Slag Phases on the Fluid Dynamics of Gas Stirred Ladles. 507-511B
On the Flow Criteria for Suspending Solid Particles in Inductively Stirred Melts. I. Newtonian Behavior. 557-562B
Experimental Investigation of Mixing Phenomena in a Gas Stirred Liquid Bath. 839-850B

Ladles
Fluid Dynamics in Bubble Stirred Ladles. I. Experiments. 745-754B
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B

Lamellar structure, Cooling effects
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A

Laminates
See Bimetals

Lanthanide metal alloys
See Thulium base alloys

Lanthanide metals
See Cerium

Laser beam hardening
Laser Melting of T1-High Speed Tool Steel. 377-382A
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A

Laser beam heating
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Fatigue Strength Improvement of Age-Hardened 18Ni Maraging Steel by Stress-Laser Surface Treatment of Subsequent Aging. 2603-2606A

Laser beam welding
On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, 5456, and 5086. 319-329B
Free Surface Flow and Heat Transfer in Conduction Mode Laser Welding. 851-858B
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B

Laser processing
See Laser beam hardening
Laser beam heating
Laser beam welding

Laser welding
See Laser beam welding

Lasers
Materials for Advanced Studies and Devices. 155-164B
Materials for Advanced Studies and Devices. 749-758A

Laterites, Reduction (chemical)
Reducibility of Laterite Ores. 181-186B

Lattice constant
See Lattice parameters

Lattice defects
See Crystal defects

Lattice displacements
See Displacements (lattice)

Lattice parameters
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T_1 (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2885-2891B

Lattices
See Crystal lattices
Orthorhombic lattice

Laves phase
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Leaching
See also Acid leaching
Dump leaching
In situ leaching
Measurements of Dielectric Properties for Particulate Sphalerite Samples and Zinc Concentrates. 13-24B
Correlation Between Dielectric Properties and Aqueous Oxidation Rate for Pulverized Sphalerites and Zinc Concentrates. 25-36B
Leaching of Manganese Nodule in Ammoniacal Medium *Using Ferrous Sulfate as the Reductant.* 331-334B
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B
Dissolution Kinetics of Argentian Plumbojarosite From Old Tailings of Sulfatizing Roasting Pyrites by HCl—$CaCl_2$ Leaching. 365-373B
Mineralogical Characterization of Silver Flotation Concentrates *Made From Zinc Neutral Leach Residues.* 803-817B

Lead (metal), Binary systems
Densities of Pb—Sn Alloys During Solidification. 2349-2354A
Enthalpies of a Binary Alloy During Solidification. 3057-3061A

Lead (metal), Casting
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B

Lead (metal), Extraction
Direct Electrowinning of Lead From Suspension Galena Concentrate Anode in Different Electrolytes. 59-65B
Bed Performance in the Direct Electrowinning of Lead From Suspension Galena Anodes. 67-72B
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions *Involving a Gaseous Intermediate*". 519B

Lead (metal), Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated *Chloride and Sulfate Solutions Relevant to Processing* Base Metal Sulfides. 37-45B

Lead (metal), Ternary systems
A New Treatment for Determining the Activities From Ternary Miscibility Gap: the O—Cu—Pb System. 373-376A

Lead base alloys, Crystal growth
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A
Ostwald Ripening in a System With a High Volume Fraction of *Coarsening Phase.* 2713-2721A

Lead base alloys, Directional solidification
Channel Formation in Pb—Sn, Pb—Sb, and Pb—Sn—Sb *Alloy Ingots and Comparison With the System* NH_4Cl—H_2O. 1861-1871A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A
Directional Solidification of Lead—Copper Immiscible Alloys in a Cyclic Gravity Environment. 2677-2680A
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Lead base alloys, Mechanical properties
Isothermal Fatigue of Low Tin Lead Based Solder. 1051-1059A
Microstructural Observations in Cyclically Deformed Pb—Sn Solid Solution Alloy. 1437-1443A
Cyclic Deformation and Fracture in Pb—Sn Solid Solution Alloy. 1533-1546A

Lead base alloys, Phase transformations
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A

Lead base alloys, Structural hardening
Inhibition of Cyclic Grain Boundary Migration Through Cellular Precipitation in Pb—5% Sn Alloy. 2355-2359A

Lead ores
See Galena

Leuders lines
See Luders lines

Levitation melting
Observations on the Dynamics of Electromagnetically Levitated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A

Levitation melting, High temperature effects
Acoustic Levitation Technique for Containerless Processing at High Temperatures in Space. 2619-2623A

Life
See Fatigue life

Light metals
See Aluminum
Aluminum base alloys
Beryllium
Magnesium
Titanium
Titanium base alloys

Lime, Reactions (chemical)
Reaction Mechanism for the CaO—Al and CaO—CaF_2 *Desulfurization of Carbon-Saturated Iron.* 261-268B

Line defects
See Dislocations

Liquid flow
Mathematical Modeling of Meniscus Profile and Melt Flow in Electromagnetic Casters. 397-408B

Liquid metals
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys: Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Liquid metals, Diffusion
Prediction of Solute Diffusion Coefficients in Liquid Metals. 273-279A

Liquid metals, Physical properties
Experimental Measurement and Numerical Computation of Velocity and Turbulence Parameters in a Heated Liquid Metal System. 765-775B
The Wetting Characteristics and Surface Tension of Some *Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia* Substrates. 1833-1839A

Liquid metals, Reactions (chemical)
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Liquid metals, Refining
The Calcium—Phosphorus and the Simultaneous Calcium—Oxygen and Calcium—Sulfur Equilibria in Liquid Iron. 617-622B

Liquid metals, Thermal properties
Thermodynamics of Molten Li—Sn Alloys. 637-644A
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B

Liquid phase diffusion
See Diffusion

Liquid phase sintering
Microstructure Effects on Tensile Properties of Tungsten— Nickel—Iron Composites. 1523-1532A
Gravity and Configurational Energy Induced Microstructural *Changes in Liquid Phase Sintering.* 1905-1913A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Liquid phases
A Study of the Transient Liquid Phase Bonding Process Applied to a Ag/Cu/Ag Sandwich Joint. 675-686A

Liquidus
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Lithium, Alloying elements
The Aging Characteristics of an Al—2% Li—3% Cu—0.12% Zr Alloy at 190°C. 51-66A
The Solubility of Hydrogen in Liquid Binary Al—Li Alloys. 227-232B
Theoretical Investigation of the Precipitation of δ' in Al—Li. 249-258A
Reactivity of Al—2.5% Li Alloy With Water as Studied by the Exploding Wire Technique. 255-259B
Fatigue Crack Propagation in Aluminum—*Lithium Alloy 2090.* I. Long Crack Behavior. 549-561A
Fatigue Crack Propagation in Alumium—Lithium Alloy 2090. II. Small Crack Behavior. 563-569A

Lithium, Binary systems
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Lithium, Quaternary systems
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—Mg Alloys. 1631-1634A

Lithium, Recovering
The Reaction Between Spodumene and Tachyhydrite. 663-668B

Lithium, Thermal properties
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Lithium compounds, Crystal lattices
The Apparent "Five-Fold" Nature of Large T_2 (Al_6Li_3Cu) Crystals. 2875-2884A
Convergent Beam Electron Diffraction Analysis of the T_1 (Al_2CuLi) Phase in Al—Li—Cu Alloys. 2885-2891B

Live loads
See Cyclic loads

Lixiviation
See Leaching

Loads (forces)
See Cyclic loads

Loose powder sintering
Kinetics of Neck Growth During Loose Stack Sintering. 2153-2161A

Low alloy steels
See also Carbon manganese steels
Electrical steels

Low alloy steels, Welding
The Nonuniform Distribution of Inclusions in Low-Alloy Steel Weld Deposits. 669-674A

Low cycle fatigue
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
The Influence of Mo_2C Morphology and Distribution on the Fatigue Crack Initiation and Propagation Behavior of Fe—C—Mo Dual-Phase Steels. 973-986A
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Low cycle fatigue, Stress effects
Influence of Time and Temperature Dependent Processes on Strain Controlled Low Cycle Fatigue Behavior of Alloy 617. 359-371A

Luders bands
See Luders lines

Luders lines
Microscopic Shear Localization in Nickel. 2041-2048A

Macrofractography
See Fractography

Magnesium, Alloying elements
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched and Solid-Quenched Alloys. 2433-2443A
Microstructure—Property Relationship in a 2XXX Aluminum Alloy With Magnesium Addition. 2523-2530A

Magnesium, Binary systems
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Magnesium, Extraction
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B

Magnesium, Impurities
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. 823-830B

Magnesium, Quaternary systems
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—Mg Alloys. 1631-1634A

Magnetic anisotropy
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet Prepared via Rapid Solidification and Hot Extrusion Techniques. 3109-3112A

Magnetic induction
See Electromagnetic induction

Magnetic materials
See also Magnetite

Magnetic materials, Crystal growth
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A

Magnetic materials, Powder technology
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet Prepared via Rapid Solidification and Hot Extrusion Techniques. 3109-3112A

Magnetic permeability
Magnetic Properties of Rare Earth—Barium—Copper Oxides in the Normal and Superconducting States. 734-738A

Magnetic permeability, Corrosion effects
Analytical Electron Microscopy of Internally Oxidized Mn—P Steel. 1876-1878A

Magnetic properties
See Curie temperature
Magnetic anisotropy
Magnetic permeability

Magnetic susceptibility
See Magnetic permeability

Magnetic transitions
Magnetic-Induced Tricritical Points in Alloys. 441-446A

Magnetite
Effect of Temperature on Magnetizing Reduction of Agbaja Iron Ore. 731-735B
The Evidence for a Miscibility Gap in the Fe_3O_4—$ZnFe_2O_4$ System—a Review. 919-925B

Magnetite, Crystal growth
Hematite Single Crystal Reduction Into Magnetite With CO—CO_2. 311-317B

Magnetization, Temperature effects
Effect of Temperature on Magnetizing Reduction of Agbaja Iron Ore. 731-735B

Manganese, Alloying elements
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type $Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound. 353-357A
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Manganese, Binary systems
Thermodynamics of the Cr—Mn System Using an Isopiestic Technique. 649-654B

Manganese, Extraction
Leaching of Manganese Nodule in Ammoniacal Medium Using Ferrous Sulfate as the Reductant. 331-334B

Manganese, Impurities
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. 823-830B

Manganese, Recovering
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B

Manganese base alloys, Phase transformations
Pretransformation Phenomena as Revealed by Elastic Waves. 185-191A

Manganese base alloys, Thermal properties
Standard Gibbs Energies of Formation of the Carbides of Manganese by EMF Measurements. 951-957B

Manganese compounds, Mechanical properties
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type $Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound. 353-357A

Manganese compounds, Powder technology
Mechanical Alloying of Brittle Materials. 2867-2874A

Manganese compounds, Reactions (chemical)
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B

Manganese steels, Mechanical properties
The Effect of Tin, Aluminum, and Nitrogen on the Hot Ductility of a Carbon—Manganese Steel Between 700-1200°C. 1305-1309A
Tensile Deformation Behavior of Mechanically Stabilized Fe—Mn Austenite. 1563-1568A
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A

Manganese steels, Metal working
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A

Manual metal arc welding
See Shielded metal arc welding

Maraging steels, Heat treatment
Fatigue Strength Improvement of Age-Hardened 18Ni Maraging Steel by Stress-Laser Surface Treatment of Subsequent Aging. 2603-2606A

Marine atmospheres
See Marine environments

Marine environments
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A

Martensite
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A
Effect of Microstructure on Plane-Strain Fracture Toughness of AISI 4340 Steel. 2513-2521A
Effect of Microstructure on Fracture Behavior of Complex Structure in 6Ni—0.3C Steel. 2606-2611A

Martensite, Crystal lattices
X-Ray and Neutron Diffraction Anomalies Preceding Martensitic Phase Transformation in $AuCuZn_2$ Alloys. 793-796A

Martensite, Phase transformations
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A

Martensitic transformations
Symmetry Aspects of Pretransformation Behavior in Metallic Alloys. 159-167A
Electron—Phonon Based Local Mode Descriptions of Displacive Transformations. 177-183A
Pretransformation Phenomena as Revealed by Elastic Waves. 185-191A

Neutron Scattering Studies of Premartensitic Indium—Thallium Alloys. 193-198A
Electron Diffuse Scattering Studies of Premartensitic Alloys: β' Cu—Zn, β' Ni—Al, In—Tl, and Fe—Ni. 199-205A
Beta-Phase Stability and Martensitic Nucleation in Hume—Rothery Alloys. 207-216A
Premartensitic Strain Tensor Analysis of $Ni_{58}Al_{42}$ by the X-Ray Divergent Beam Method. 217-223A
X-Ray Study of the Premartensitic Phenomena in AuCd. 265-271A
Swing Back in Kinetics Near M_S in Hypereutectoid Steels. 447-452A
Nonlinear and Nonlocal Continuum Model of Transformation Precursors in Martensites. 761-775A
Modulated Lattice Relaxation in β-Based Premartensitic Phase. 777-781A
Computer Study of Tweed as a Precursor to a Martensitic Transformation of a BCC Lattice. 783-787A
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A
X-Ray and Neutron Diffraction Anomalies Preceding Martensitic Phase Transformation in $AuCuZn_2$ Alloys. 793-796A
Tweed Structures Associated With FCC—FCT Transformations in Fe—Pd Alloys. 803-810A
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. *811-818A*
Elastic Properties of β-Uranium and the Martensitic α'-Phase in Uranium—Gallium Alloys. 909-913A
Some Stress—Strain—Temperature Relationships for Shape Memory Alloys. 2407-2413A
A Theoretical Analysis of the Spinodal Decomposition in Fe—C Martensite During Aging Stage of Tempering. 2427-2432A
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. 2723-2731A
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. *2931-2936A*

Martensitic transformations, Alloying effects
Tensile Deformation Behavior of Mechanically Stabilized Fe—Mn Austenite. 1563-1568A

Martensitic transformations, Diffusion effects
Nature of the γ and γ Phases in Austenitic Stainless Steels Cathodically Charged With Hydrogen.* 723-730A

Martensitic transformations, Low temperature effects
Low Temperature Electron Microscopy on the Cubic-Tetragonal Transformation of V_3Si. 797-801A

Martensitic transformations, Microstructural effects
Thermodynamics and Kinetics of δ → α Martensitic Transformation in Plutonium Alloys. 2705-2711A

Martensitic transformations, Stress effects
Orientation Dependence of $\beta_1 \rightarrow \beta'_1$ Stress-Induced Martensitic Transformation in a Cu—Al—Ni Alloy. 915-923A
Effect of Temperature and Strain Distribution on Martensitic *Transformation During Uniaxial Testing of AISI-304 Stainless Steel.* 1021-1026A

Mass transfer
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B

Master alloys, Development
Discussion of "The Role of Boron in the Grain Refinement of Aluminum With Titanium" and Authors' Reply. 385-387A

Materials testing
See Surface analysis (chemical)
Ultrasonic testing
Volumetric analysis

Mathematical analysis
Thermodynamic Consistency of the Interaction Parameter Formalism. 269-275B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. *1061-1066A*
Determination of Dihedral Angle Distributions in Polycrystals: Application to α + β Brass. 1147-1151A
Intercrystalline Structure Distribution in Alloy 304 Stainless Steel. 1179-1185A
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A
Modeling Tensile Deformation of Dual-Phase Steel. *1263-1268A*
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
Microsegregation in Directionally Solidified Pb—8.4 at.% Au Alloy. 1351-1364A
Some Stress—Strain—Temperature Relationships for Shape Memory Alloys. 2407-2413A

Mathematical models
Creep—Fatigue Life Prediction in Terms of Nucleation and Growth of Fatigue Crack and Creep Cavities. 121-127A
Energy Cost Minimization in Grate/Kiln Induration. 123-132B
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A
Performance Analysis of the Aluminum Casting Furnace. *171-180B*
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B
Melting Metal Powder Particles in an Inductively Coupled R.F. Plasma Torch. 213-226B
Prediction of Solute Diffusion Coefficients in Liquid Metals. 273-279A
Investigation of Panel Crack Formation in Steel Ingots. I. *Mathematical Analysis and Mid-Face Panel Cracks.* 277-287B
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B
Mathematical Modeling of Meniscus Profile and Melt Flow in Electromagnetic Casters. 397-408B
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B
Volume Effects and Associations in Liquid Alloys. 465-470B
The Mathematical Modeling Revolution in Extractive Metallurgy. 525-540B
Thermodynamics for Arsenic and Antimony in Copper Matte *Converting—Computer Simulation.* 547-556B
On the Flow Criteria for Suspending Solid Particles in Inductively Stirred Melts. I. Newtonian Behavior. 557-562B
Thermal Explosions Resulting From Fuel—Coolant Interactions: Analysis of Single Bubble Hydrodynamics. 563-570B
A Simple Fluid Mechanical Model for Planar Flow Casting Melt-Spinning. 571-579B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. I. Theory and Experiments With Cold Models. 581-593B
The Calcium—Phosphorus and the Simultaneous Calcium— Oxygen and Calcium—Sulfur Equilibria in Liquid Iron. 617-622B
Modeling of Thermomechanical Processing of Heat-Treatable Aluminum Alloys. 617-625A
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B
Experimental Measurement and Numerical Computation of *Velocity and Turbulence Parameters in a Heated Liquid* Metal System. 765-775B
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. *811-818A*
The Trajectories and Distribution of Particles in a Turbulent Axisymmetric Gas Jet Injected Into a Flash Furnace Shaft. 871-884B
Characterization of Two-Phase Axisymmetric Plume in a Gas Stirred Liquid Bath—a Water Model Study. 885-892B
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A
Microstructure and Fracture Toughness of the Aged β-Ti *Alloy Ti—10V—2Fe—3Al.* *1037-1049A*
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A
Effect of Annealing Temperature on Yield Anisotropy of Zircaloy-4 TREX. 1243-1255A
Crack Growth From Internal Hydrogen—Temperature and *Microstructural Effects in 4340 Steel.* *1319-1334A*
Fractal Analysis of a Nucleation and Growth Process. 1371-1372A
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A
Predicting the Kinetics of Hydrogen Generation at the Tips of Corrosion Fatigue Cracks. 1795-1806A
On the Slopes of Phase Boundaries. 1819-1825A
Thermodynamics of Segregation in Alloys. 2091-2098A
A New Model for Precipitation at Moving Interphase Boundaries. 2133-2138A
Initial Development of Thermal and Stress Fields in Continu*ously Cast Steel Billets.* *2589-2602A*
Enthalpies of a Binary Alloy During Solidification. 3057-3061A

Mathematics
See Finite element method
Mathematical analysis
Mathematical models

Mattes
See Copper mattes

Measurement
See also Flow measurement
Thickness measurements

Measurement, Shape effects
Grain Shape and Its Influence on the Experimental Measurement of Grain Size. 933-940A

Measuring
See Measurement

Measuring instruments
See Accelerometers
Polarimeters
Temperature measuring instruments

Mechanical alloying
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A
Yield Stress as Determined From Hardness Measurements for Mechanically Alloyed Aluminum Base Alloys. 2363-2366A

Mechanical alloying, Temperature effects
Mechanical Alloying of Brittle Materials. *2867-2874A*

Mechanical properties
See Bend strength
Bonding strength
Brittleness
Compressive strength
Creep (materials)
Creep life
Creep rate
Creep rupture strength
Creep strength
Diamond pyramid hardness
Ductile brittle transition
Ductility
Elastic anisotropy
Elastic constants
Elongation
Fatigue (materials)
Fatigue life
Fatigue strength

Fracture strength
Fracture toughness
Hardness
Hydrogen embrittlement
Impact strength
Internal friction
Microhardness
Modulus of elasticity
Notch sensitivity
Plasticity
Residual stress
Shear strength
Shear stress
Stress relaxation
Superplasticity
Temper brittleness
Tensile properties
Tensile strength
Thermoelastic properties
Toughness
True strain
Yield point
Yield strength

Mechanical tests
See Creep tests
Fatigue tests
Hardness tests
Tension tests

Mechanics
See Fluid dynamics
Fluid mechanics
Fracture mechanics
Hydrodynamics
Kinetics

Melt spinning
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A
A Simple Fluid Mechanical Model for Planar Flow Casting Melt-Spinning. 571-579B
Characterization of the Aging Response of a Melt-Spun Al—Be—Li Alloy Ribbon. 1173-1178A
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A
Rutherford Backscattering Study of High Temperature Oxidation of Melt-Spun Glassy Fe—22.5Al—10Zr. 2567-2573A
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet Prepared via Rapid Solidification and Hot Extrusion Techniques. 3109-3112A

Melting
See Levitation melting
Plasma arc melting
Vacuum arc melting

Melting furnaces
See Converters

Melting points
The Influence of the Ternary Interaction Parameter ϵ_{ijk} on the Activity of Bismuth in Molten Copper. 427-432B

Melting points, Composition effects
A Melting and Solidification Study of Alloy 625. 2319-2331A

Melts
On the Flow Criteria for Suspending Solid Particles in Inductively Stirred Melts. I. Newtonian Behavior. 557-562B

Melts, Reactions (chemical)
On the Interfacial Rate of Reaction of CO_2 With a Calcium Ferrite Melt. 959-965B

Memory (shape)
See Shape memory

Mercury (metal), Extraction
Study by SEM-EDS of the In Situ Dynamic Leaching of Mercury Ores. 165-170B

Mercury compounds, Beneficiation
Study by SEM-EDS of the In Situ Dynamic Leaching of Mercury Ores. 165-170B

Metal baths
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Metal carbides
See Tungsten carbide

Metal powders
See also Alloy powders

Metal powders, Melting
Melting Metal Powder Particles in an Inductively Coupled R.F. Plasma Torch. 213-226B

Metal powders, Microstructure
The Evolution of Microcrystalline Structures in Supercooled Metal Powders. 699-708A
The Microstructure and Phase Relationships in Rapidly Solidified Type 304 Stainless Steel Powders. 2399-2405A

Metal working
See Finish rolling
Hot rolling
Stretch forming
Thermomechanical treatment

Metallic glasses
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A

Metallic glasses, Alloy development
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A

Metallic glasses, Casting
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Metallic glasses, Microstructure
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Metallic glasses, Oxidation
Rutherford Backscattering Study of High Temperature Oxidation of Melt-Spun Glassy Fe—22.5Al—10Zr. 2567-2573A

Metallic glasses, Phase transformations
Quasicrystalline Phase in Al—Si—Mn System Prepared by Annealing of Amorphous Phase. 383-385A
Phase Transformation During Annealing of Rapidly Solidified Aluminum-Rich Al—Fe—Si Alloys. 2893-2900A

Metallic glasses, Phases (state of matter)
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A

Metallic glasses, Physical properties
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Metallic glasses, Powder technology
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and Their Structural Relaxation Behavior. 235-242A
Mechanical Alloying of Brittle Materials. 2867-2874A

Metallic glasses, Synthesis
Formation of Ultra-Fine Amorphous Powders in Fe—M—B (M = Transition Metal) Systems by Chemical Reduction Method and Their Thermal and Magnetic Properties. 2315-2318A

Metallic glasses, Welding
Consolidation of Metallic Glass Ribbons Using Electric Discharge Welding. 1634-1638A

Metallographic structures
See Microstructure

Metallography
See Quantitative metallography

Metalloid alloys
See Silicon base alloys

Metalloid compounds
See Silicon carbide
Silicon compounds
Silicon dioxide

Metalloids
See Arsenic
Boron
Silicon

Metallurgical constituents
See Laves phase

Metastable phases
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A
Theoretical Investigation of the Precipitation of δ′ in Al—Li. 249-258A
Investigation of Phase Transformation in an Al—0.58 wt.% Fe Alloy by Mossbauer Spectroscopy. 259-264A
Quasicrystalline Phase in Al—Si—Mn System Prepared by Annealing of Amorphous Phase. 383-385A
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. II. Mechanisms. 1965-1971A
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A
The Microstructure and Phase Relationships in Rapidly Solidified Type 304 Stainless Steel Powders. 2399-2405A

Metastable phases, Crystal lattices
Microstructural Characterization of the Dispersed Phases in Al—Ce—Fe System. 1645-1656A

Metastable phases, Heating effects
Phase Transformation During Annealing of Rapidly Solidified Aluminum-Rich Al—Fe—Si Alloys. 2893-2900A

Meteorites, Microstructure
Meteorites as Specimens for Microgravity Research. 1919-1923A

Metering (measurement)
See Measurement

Microalloyed steels
See High strength low alloy steels

Microcracking
See Crack initiation

Microfractography
See Fractography

Microhardness, Alloying effects
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Microhardness, Diffusion effects
Effect of Cathodic Charging on the Mechanical Properties of Aluminum. 2299-2304A

Microporosity, Composition effects
Study of Microporosity Formation in Nickel-Base Superalloys. 2341-2348A

Microradiography
Measuring Creep Damage Using Microradiography. 837-845A

Microscopy
See Electron microscopy
Microradiography
Transmission electron microscopy

Microstructure
See also Lamellar structure
Investigation of Panel Crack Formation in Steel Ingots. II. Off-Corner Panel Cracks. 289-301B
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A
Gravity and Configurational Energy Induced Microstructural Changes in Liquid Phase Sintering. 1905-1913A

Microstructure, Alloying effects
*The Effect of Varying Aluminum, Titanium, and Niobium Con*tent on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A
*Competitive Growth of Stable and Metastable Fe—C—X Eu*tectics. II. Mechanisms. 1965-1971A
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' *Strengthened Nickel-Base Superalloy.* 1981-1990A
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A
Microstructure—Property Relationship in a 2XXX Aluminum *Alloy With Magnesium Addition.* 2523-2530A

Microstructure, Composition effects
The Influence of Interfacial Energies and Gravitational Levels on the Directionally Solidified Structures in Hypermonotectic Alloys. 2665-2669A
The Partitioning of Alloying Elements in Vacuum Arc Re*melted, Palladium-Modified PH 13-8 Molybdenum Alloys.* 3063-3069A

Microstructure, Deformation effects
Microscopic Shear Localization in Nickel. 2041-2048A
Assessment of Service Induced Microstructural Damage and Its Rejuvenation in Turbine Blades. 2049-2066A

Microstructure, Impurity effects
The Influence of Boron on the Grain Boundary Chemistry and Microstructure of Ni—16Cr—9Fe—0.03C. 2555-2566A

Mill scale
See Scale (corrosion)

Mineral acids
See Inorganic acids

Miscibility
A New Treatment for Determining the Activities From Ternary Miscibility Gap: the O—Cu—Pb System. 373-376A

Mixing
See also Ion beam mixing
Mechanical alloying
Fluid Dynamics in Channel Reactors Stirred by Submerged Gas Injection. 603-612B

Mobility
See Dislocation mobility

Modulus of elasticity
Transverse Elastic Moduli of Unidirectional Fiber Composites With Interfacial Debonding. 129-135A
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A

Modulus of elasticity, High temperature effects
The Elastic Modulus and Flow Stress of Nb_3Sn at Elevated Temperatures. 1127-1128A

Modulus of elasticity, Microstructural effects
Orientation Dependence of $\beta_1 \rightarrow \beta'_1$ Stress-Induced Martensitic Transformation in a Cu—Al—Ni Alloy. 915-923A

Moistening
See Wetting

Moisture
See Water

Molds, Design
*Influence of Mold Length and Mold Heat Transfer on Horizon*tal Continuous Casting of Nonferrous Alloy Rods. 201-212B

Molten metal baths
See Metal baths

Molten metals
See Liquid metals

Molybdenum, Alloying elements
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy *Steels.* 2171-2177A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Molybdenum, Recovering
Studies on Oxychlorination of MoS_2 in a Fluid Bed Reactor. 669-675B

Molybdenum, Ternary systems
An Experimental Study and a Thermodynamic Evaluation of the Fe—Cr—Mo System. 1385-1394A

Molybdenum, Thermal properties
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Molybdenum base alloys, Coating
Evaluation of High-Temperature Diffusion Barriers for the Pt—Mo System. 2163-2170A

Molybdenum chromium nickel steels
See Nickel chromium molybdenum steels

Molybdenum chromium steels
See Chromium molybdenum steels

Molybdenum compounds, Crystal lattices
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A

Molybdenum nickel chromium steels
See Nickel chromium molybdenum steels

Molybdenum steels
See also Chromium molybdenum steels
Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels

Molybdenum steels, Cleaning
Studies on the Determination of Surface Deuterium in AISI 1062, 4037, and 4140 Steels by Secondary Ion Mass Spectrometry. 3071-3075A

Molybdenum steels, Mechanical properties
The Influence of Mo_2C Morphology and Distribution on the *Fatigue Crack Initiation and Propagation Behavior of Fe—* C—Mo Dual-Phase Steels. 973-986A

Molybdenum steels, Phase transformations
*Effect of Deformation on the Austenite-to-Ferrite Transfor*mation in a Plain Carbon and Two Microalloyed Steels. 417-426A

Molybdenum steels, Structural hardening
*Orowan Strengthening by Mo_2C Fibers and Needle Inter*phase Precipitates in Fe—C—Mo Dual-Phase Steels. 1617-1620A

Monocrystals
See Single crystals

Natural strain
See True strain

Necking
Void Formation During Tensile Testing of Dual Phase Steels. 579-589A

Necking, Temperature effects
The Flow Equation and Its Necking Criterion in Austenitic Cryogenic Fe—Mn—Al—X Steels. 1625-1626A

Neutron diffraction
X-Ray and Neutron Diffraction Anomalies Preceding Martensitic Phase Transformation in $AuCuZn_2$ Alloys. 793-796A
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Nickel, Alloying elements
Discussion of "Sulfide Stress Cracking Susceptibility of Nickel Containing Steels" and Authors' Reply. 153A
Directional Solidification of Al—Ni/SiC Composites During *Parabolic Trajectories.* 1899-1904A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A
A Preliminary Study of the Influence of Separate and Com*bined Aluminum and Nickel Additions on the Properties of* a Secondary Hardening Steel. 3103-3107A

Nickel, Diffusion
Thermodynamics of Segregation in Alloys. 2091-2098A

Nickel, Extraction
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, *and $NiSO_4$ in Aqueous Solution.* 5-12B
Reducibility of Laterite Ores. 181-186B
Leaching of Manganese Nodule in Ammoniacal Medium *Using Ferrous Sulfate as the Reductant.* 331-334B
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. 823-830B

Nickel, Irradiation
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A

Nickel, Melting
Observations on the Dynamics of Electromagnetically Levitated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A

Nickel, Microstructure
Microscopic Shear Localization in Nickel. 2041-2048A

Nickel, Powder technology
The Evolution of Microcrystalline Structures in Supercooled Metal Powders. 699-708A

Nickel, Reactions (chemical)
*Speciation and Reduction Potentials of Metal Ions in Concen*trated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

Nickel, Recovering
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B

Nickel, Solubility
The Effect of Temperature on Nickel Solubility in Silica Saturated Fayalite Slags From 1523-1623K. 243-247B

Nickel, Ternary systems
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A

Nickel base alloys, Casting
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A

Nickel base alloys, Cladding
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Nickel base alloys, Composite materials
Creep Deformation of Ni_3Al—Mo In Situ Composites. 987-998A

Nickel base alloys, Corrosion
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A

Nickel base alloys, Crystal growth
Dendritic Growth of Undercooled Nickel—Tin. III. 1109-1119A

Nickel base alloys, Crystal lattices
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy. 1667-1675A

Nickel base alloys, Diffusion
Grain Boundary Segregation in the Nickel-Base Alloy 182. 137-143A
Thermodynamics of Segregation in Alloys. 2091-2098A

Nickel base alloys, Directional solidification
Study of Solidification Features of Nickel-Base Superalloys in *Relation With Composition.* 2333-2340A
Study of Microporosity Formation in Nickel-Base Superalloys. 2341-2348A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A

Nickel base alloys, Heat treatment
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A

Nickel base alloys, Mechanical properties
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A
Influence of Time and Temperature Dependent Processes on Strain Controlled Low Cycle Fatigue Behavior of Alloy 617. 359-371A
Creep—Fatigue Behavior of Directionally Solidified and Single *Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature.* 479-486A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load in Notched Rupture Tests. 863-871A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
Tensile and Impact Properties Changes of Hastelloy X After Exposure in High-Temperature Helium Environment. 1269-1275A
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A
The Absence of Steady-State Flow During Large Strain Plastic *Deformation of Some FCC Metals at Low and Intermediate* Temperatures.. 3013-3024A

Nickel base alloys, Melting
Observations on the Dynamics of Electromagnetically Levitated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A

Nickel base alloys, Microstructure
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Assessment of Service Induced Microstructural Damage and *Its Rejuvenation in Turbine Blades.* 2049-2066A
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A
The Influence of Boron on the Grain Boundary Chemistry and *Microstructure of Ni—16Cr—9Fe—0.03C.* 2555-2566A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Nickel base alloys, Phase transformations
Electron Diffuse Scattering Studies of Premartensitic Alloys: β' Cu—Zn, β' Ni—Al, In—Tl, and Fe—Ni. 199-205A
*Premartensitic Strain Tensor Analysis of $Ni_{58}Al_{42}$ by the X-*Ray Divergent Beam Method. 217-223A
Modulated Lattice Relaxation in β-Based Premartensitic Phase. 777-781A
A Melting and Solidification Study of Alloy 625. 2319-2331A

Nickel base alloys, Phases (state of matter)
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A

Nickel base alloys, Physical properties
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A
The Wetting Characteristics and Surface Tension of Some Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia Substrates. 1833-1839A

Nickel base alloys, Powder technology
Preparation of Iron-, Cobalt- and Nickel-Based Amorphous Alloy Powders by High-Pressure Gas Atomization and *Their Structural Relaxation Behavior.* 235-242A
Mechanical Alloying of Brittle Materials. 2867-2874A

Nickel base alloys, Reactions (chemical)
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A

Nickel base alloys, Solubility
Thermodynamic Consistency of the Interaction Parameter *Formalism.* 269-275B
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B

Nickel base alloys, Structural hardening
Precipitation of the δ-Ni_3Nb Phase in Two Nickel Base Superalloys. 453-465A

Nickel base alloys, Surface properties
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B
Surface Segregation in MCrAlY Alloys. 2099-2108A
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Nickel base alloys, Welding
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. 2305-2313A

Nickel chromium molybdenum steels, Corrosion
Effects of Frequency and Temperature on Short Fatigue Crack Growth in Aqueous Environments. 543-548A
Corrosion Fatigue Crack Initiation in a Mode II Notch Specimen. 1067-1073A
*Clean Steels for Steam Turbine Rotors—Their Stress Corro*sion Cracking Resistance. 1583-1596A
Influence of Austenitizing Temperature on Stress Corrosion *in 4330M Steel—the Role of Impurity Segregation in Stress* Corrosion Cracking of High Strength Steel. 2225-2231A

Nickel chromium molybdenum steels, Heat treatment
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A

Nickel chromium molybdenum steels, Mechanical properties
Effect of Hot-Rolling Reduction on Shape of Sulfide Inclusions and Fracture Toughness of AISI 4340 Ultrahigh *Strength Steel.* 1555-1561A
Effect of Microstructure on Plane-Strain Fracture Toughness of AISI 4340 Steel. 2513-2521A
Mode III Fracture of 4340 Steel: Effects of Tempering Tem*perature and Fracture Surface Interference.* 3035-3044A

Nickel chromium steels
See also Nickel chromium molybdenum steels

Nickel chromium steels, Corrosion
Clean Steels for Steam Turbine Rotors—Their Stress Corro*sion Cracking Resistance.* 1583-1596A

Nickel chromium steels, Phases (state of matter)
Bainite Formation in Low Carbon Cr—Ni Steels. 1695-1701A

Nickel compounds, Crystal lattices
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A

Nickel compounds, Mechanical properties
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A
Hydrogen Embrittlement of Pseudobinary $L1_2$-Type *$Ni_3(Al_{0.4}Mn_{0.6})$ Intermetallic Compound.* 353-357A
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
The Strength of Ni_3Al Containing Titanium and Boron. 732-733A

Nickel compounds, Reduction (chemical)
*The Effect of Alkali Salt Catalyst on the Carbothermic Reduc*tion of Nickel Oxide. 685-686B

Nickel molybdenum chromium steels
See Nickel chromium molybdenum steels

Nickel molybdenum steels
See Nickel chromium molybdenum steels

Nickel steels
See also Nickel chromium molybdenum steels
Nickel chromium steels

Nickel steels, Mechanical properties
Effect of Microstructure on Fracture Behavior of Complex Structure in 6Ni—0.3C Steel. 2606-2611A

Niobium, Alloying elements
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A

Niobium, Binary systems
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A

Niobium, Solubility
Nitrogen Solubility in Solid Niobium. 613-616B

Niobium base alloys, Diffusion
Change in Direction of Carbon Thermotransport in Nb—V System With Alloying. 1429-1435A

Niobium base alloys, Phases (state of matter)
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A

Niobium base alloys, Thermal properties
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Niobium compounds, Mechanical properties
The Elastic Modulus and Flow Stress of Nb_3Sn at Elevated Temperatures. 1127-1128A

Niobium compounds, Reactions (chemical)
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B

Nitrogen, Alloying elements
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A

Nitrogen, Binary systems
High Temperature Thermodynamics of the Cr—Cr_2N—N_2 System. 471-476B

Nitrogen, Solubility
Thermodynamics of Nitrogen in CaO—SiO_2—Al_2O_3 Slags and Its Reaction With Fe—C_{sat} Melts. 419-425B
Nitrogen Solubility in Solid Niobium. 613-616B

Nitrogen, Sorption
Rate of Nitrogen Desorption From Liquid Iron—Carbon and Iron—*Chromium Alloys With Argon.* 233-242B

Nitrogen, Trace elements
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—*Carbon and Iron—Nitrogen Martensites.* 925-932A

Nodular iron, Heat treatment
Development of High Toughness in Austempered Type Ductile *Cast Iron and Evaluation of Its Properties.* 319-327A

Nodules
See Sea nodules

Nondestructive testing
See Microradiography
Ultrasonic testing

Nonferrous metals
Correlations of Electrical Conductivity to Slag Composition and Temperature. 133-140B

Nonferrous metals, Mechanical properties
Effects of Work-Hardening and Rate Sensitivity on the Sheet Tensile Test. 293-300A

Nonferrous metals, Recovering
Bubbling at High Flow Rates in Inviscid and Viscous Liquids (Slags). 83-94B

Nonferrous smelting
See Smelting

Nonmetallic inclusions
The Nonuniform Distribution of Inclusions in Low-Alloy Steel Weld Deposits. 669-674A

Nonmetallic inclusions, Deformation effects
Effect of Hot-Rolling Reduction on Shape of Sulfide Inclusions and Fracture Toughness of AISI 4340 Ultrahigh *Strength Steel.* 1555-1561A

Notch brittleness
See Brittleness

Notch ductility
See Ductility

Notch effect
See Notch sensitivity

Notch impact strength
See Impact strength

Notch sensitivity
Application of the dc Potential Drop Technique in Investigating *Crack Initiation and Propagation Under Sustained Load* in Notched Rupture Tests. 863-871A
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A
High Frequency Stage I Corrosion Fatigue of Austenitic Stainless Steel (316L). 2753-2764A
The Nucleation of High Temperature Brittle Intergranular *Fracture in 2.25Cr—1Mo Steel.* 3005-3011A

Notched bar tensile test
See Tension tests

Nuclear energy
See Nuclear power generation

Nuclear fuel claddings
See Nuclear fuel elements

Nuclear fuel elements, Corrosion
The Influence of Hydride Size and Matrix Strength on Fracture Initiation at Hydrides in Zirconium Alloys. 1507-1522A

Nuclear power generation
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A
Determination of Fracture Initiation in Hydride Blisters Using *Acoustic Emission.* 2247-2257A

Nuclear power plants
See Nuclear power generation

Nucleation
The Kinetics of Ferrite Nucleation at Austenite Grain Boundaries in Fe—C Alloys. 427-440A
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
The Evolution of Microcrystalline Structures in Supercooled Metal Powders. 699-708A
The Nucleation of Iron on Dense Wustite: a Morphological Study. 787-802B
The Effect of Matrix Strength on Void Nucleation and Growth *in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5.* 1163-1171A
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A
Fractal Analysis of a Nucleation and Growth Process. 1371-1372A
A New Model for Precipitation at Moving Interphase Boundaries. 2133-2138A
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. 2931-2936A

Nucleation, Alloying effects
Influence of Rare Earth Metals on the Nucleation and Solidification Behavior of Iron and 1045 Steel. 383-395B

Nucleation, Cooling effects
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A

Nucleation, Size effects
Calculation of the Product Phase Grain Boundary Area During Solid State Transformations. 2123-2131A

Nuclei (transformation)
See Nucleation

O ring seals, Nondestructive testing
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A

Optical instruments
See Polarimeters

Optical masers
See Lasers

Order disorder
See also Short range order
Magnetic-Induced Tricritical Points in Alloys. 441-446A
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. 811-818A
Kinetics of Domain Growth in Ordered Ni_4Mo. 941-952A
Effect of Rapid Solidification and Alloying Addition on Lattice Distortion and Atomic Ordering in $L1_0$ TiAl Alloys and Their Ternary Alloys. 2445-2455A

Ordering
See Order disorder

Ores
See Chromium ores
Galena
Hematite
Iron ores
Laterites
Magnetite
Rutile
Sphalerite

Organic compounds
The Behavior of Thiourea and Flotation Reagents in Zinc Electrowinning Circuits. 187-199B

Orientation
See also Grain orientation
Orientation relationships
Orientation Dependence of $\beta_1 \rightarrow \beta'_1$ Stress-Induced Martensitic Transformation in a Cu—Al—Ni Alloy. 915-923A

Orientation relationships
Intercrystalline Structure Distribution in Polycrystalline Materials. 2611A

Orthorhombic lattice
Microstructural Characterization of the Dispersed Phases in Al—Ce—Fe System. 1645-1656A

OSM process
See Oxygen steel making

Oxidation
See also Internal oxidation
Diffusion Induced Grain Boundary Migration and Recrystallization During Oxidation of a Ni—48.5% Cu Alloy. 1667-1675A
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A

Oxidation rate
Correlation Between Dielectric Properties and Aqueous Oxidation Rate for Pulverized Sphalerites and Zinc Concentrates. 25-36B
Oxidation of Molten Copper Matte. 47-52B

Oxide coatings
Rutherford Backscattering Study of High Temperature Oxidation of Melt-Spun Glassy Fe—22.5Al—10Zr. 2567-2573A

Oxide films
See Oxide coatings

Oxides
See also Aluminum oxide
Carbon dioxide
Iron oxides
Lime
Silicon dioxide
Titanium dioxide
Wustite

Oxides, Reactions (chemical)
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide *(COS) Contaminated Atmospheres.* 303-310B
Analysis of Dissolution Rate of Metal Oxide in Acidic Chloride Solution in Terms of Water Activity. 505-507B

Oxides, Reduction (chemical)
The Effect of Alkali Salt Catalyst on the Carbothermic Reduction of Nickel Oxide. 685-686B

Oxides, Superconductivity
Magnetic Properties of Rare Earth—Barium—Copper Oxides in the Normal and Superconducting States. 734-738A
Electrical Properties of High T_C $EuBa_2Cu_3O_{7-x}$. 738-743A

Oxidizing
See Oxidation

Oxygen, Alloying elements
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B
Effects of Oxygen and Heat Treatment on the Mechanical Properties of Alpha and Beta Titanium Alloys. 527-542A
Electrical Properties of High T_C $EuBa_2Cu_3O_{7-x}$. 738-743A

Oxygen, Diffusion
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A

Oxygen, Dopants
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B

Oxygen, Impurities
Solubility and Diffusion of Hydrogen in Vanadium—Oxygen Alloys. 67-72A
The Interaction Between Oxygen and Bismuth in Dilute Solution in Copper at 1300°C. 623-626B

Oxygen, Solubility
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B

Oxygen, Ternary systems
A New Treatment for Determining the Activities From Ternary Miscibility Gap: the O—Cu—Pb System. 373-376A

Oxygen conversion processes
See Oxygen steel making

Oxygen steel making
The Nucleation of Carbon Monoxide Bubbles in Molten *Iron—Carbon Drops Reacting With Oxidizing Gases.* 831-837B
Experimental Investigation of Mixing Phenomena in a Gas Stirred Liquid Bath. 839-850B

Packing (crystal density)
See Crystal structure

Palladium, Alloying elements
Tweed Structures Associated With FCC—FCT Transformations in Fe—Pd Alloys. 803-810A

Parameters
See Lattice parameters
Welding parameters

Particle interactions, Heating effects
The Precipitation Behavior of a Zr—2.5 wt.% Nb Alloy. 1153-1162A

Particle shape
On the Formation of Dispersoids During Rapid Solidification *of an Al—Fe—Ni Alloy.* 1101-1107A

Particle size
Melting Metal Powder Particles in an Inductively Coupled R.F. *Plasma Torch.* 213-226B
Dissolution Kinetics of Particulate Graphite Injected Into Iron/Carbon Melts. 375-382B
Analytical Electron Microscopy of Internally Oxidized Low Si—Al Steel. 953-959A
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A

Particles (of physics)
Characterization of the Aging Response of a Melt-Spun Al—Be—Li Alloy Ribbon. 1173-1178A

Particulate composites, Directional solidification
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. 2847-2855A

Particulate composites, Fabrication
A Method of Assessing the Reactivity Between SiC and Molten Aluminum. 3107-3109A

Particulate composites, Structural hardening
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A

Pearlite, Alloying effects
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Pellets
A Dynamic Mathematical Model of the Complete Grate/Kiln Iron-Ore Pellet Induration Process. 103-112B
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B
Energy Cost Minimization in Grate/Kiln Induration. 123-132B

Permeability
Hydrogen in Iron. 691-707B
Hydrogen in Iron. 2371-2387A

Permeability, Temperature effects
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A

Permeability (magnetic)
See Magnetic permeability

Permittivity
See Dielectric constant

Phase boundary
On the Slopes of Phase Boundaries. 1819-1825A
A New Model for Precipitation at Moving Interphase Boundaries. 2133-2138A
Application of a New Model to the Interphase Precipitation Reaction in Vanadium Steels. 2139-2151A

Phase decomposition
See also Eutectoid decomposition
Spinodal decomposition
Phase Transformations and Modulated Microstructures in Ti—Al—Nb Alloys. 225-234A
Swing Back in Kinetics Near M_S in Hypereutectoid Steels. 447-452A

Phase decomposition, Deformation effects
Effect of Deformation on the Austenite-to-Ferrite Transformation in a Plain Carbon and Two Microalloyed Steels. 417-426A

Phase diagram reactions
See also Austenitizing
Eutectic reactions
Eutectoid decomposition
Eutectoid reactions
Martensitic transformations
Phase decomposition
Spinodal decomposition
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Phase diagram reactions, Alloying effects
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A

Phase diagram reactions, Composition effects
A Melting and Solidification Study of Alloy 625. 2319-2331A
Study of Solidification Features of Nickel-Base Superalloys in *Relation With Composition.* 2333-2340A
Densities of Pb—Sn Alloys During Solidification. 2349-2354A

Phase diagrams
Phase Stability Relationships and Glass Formation in the System Cu—Ag—In. 13-21A
Calculation of the Titanium—Aluminum Phase Diagram. 243-247A
Experimental and Calculated Ag + Au + Ge Phase Dia*gram.* *409-416A*
The Influence of the Ternary Interaction Parameter ζ_{Bi}^{Fe} on the Activity of Bismuth in Molten Copper. 427-432B
Magnetic-Induced Tricritical Points in Alloys. 441-446A
A Thermodynamic Evaluation of the Fe—Cr—C System. 627-636A
Thermodynamics of the Cr—Mn System Using an Isopiestic Technique. 649-654B
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A
Standard Gibbs Energies of Formation of the Carbides of Manganese by EMF Measurements. 951-957B
An Experimental Study and a Thermodynamic Evaluation of *the Fe—Cr—Mo System.* *1385-1394A*
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—Mg Alloys. 1631-1634A
Microstructural Characterization of the Dispersed Phases in *Al—Ce—Fe System.* 1645-1656A
On the Slopes of Phase Boundaries. 1819-1825A
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Al*loys.* *1853-1860A*
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A
Influence of Gravity Level and Interfacial Energies on Dispersion-Forming Tendencies in Hypermonotectic Cu—*Pb—Al Alloys.* *2645-2650A*
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A
Eutectic Structures of Ag—Cu After Melting and Solidification *in Microgravity and on Earth.* 2659-2364A
The Influence of Interfacial Energies and Gravitational Levels on the Directionally Solidified Structures in Hypermonotectic Alloys. 2665-2669A
Directional Solidification of Lead—Copper Immiscible Alloys in a Cyclic Gravity Environment. 2677-2680A
Enthalpies of a Binary Alloy During Solidification. 3057-3061A

Phase stability
Beta-Phase Stability and Martensitic Nucleation in Hume—Rothery Alloys. 207-216A
*Carbothermic Reduction of Silicon Dioxide—a Thermody*namic Investigation. 249-253B
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A

Phase stability, Alloying effects
The Effect of Varying Aluminum, Titanium, and Niobium Con*tent on the Phase Stability of Inconel 718.* 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A
Competitive Growth of Stable and Metastable Fe—C—X Eu*tectics. II. Mechanisms.* 1965-1971A

Phase stability, High temperature effects
Thermodynamics of the Cr—Mn System Using an Isopiestic *Technique.* 649-654B

Phase structure
See Solid phases

Phase transformations
See also Austenitizing
Martensitic transformations
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A
Bainite Formation in Low Carbon Cr—Ni Steels. 1695-1701A
Spinodal Decomposition of a Co—Ti—Nb Alloy. 1703-1709A
On the Slopes of Phase Boundaries. 1819-1825A
Calculation of the Product Phase Grain Boundary Area During Solid State Transformations. 2123-2131A
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A

Phase transformations, Alloying effects
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A

Phase transformations, Heating effects
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A

Phases (state of matter)
See also Intermetallic phases
Laves phase
Liquid phases
Metastable phases
Solid phases

Phases (state of matter), Crystal lattices
Modulated Lattice Relaxation in β-Based Premartensitic Phase. 777-781A

Phosphides, Crystal growth
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B

Phosphorus, Alloying elements
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A

Phosphorus, Impurities
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A

Phosphorus, Trace elements
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A

Photo oxidation
See Oxidation

Photography
See Microradiography

Physical properties
See Capillarity
Curie temperature
Density
Dielectric constant
Diffusivity
Emissivity
Heat of activation
Heat of formation
Heat of mixing
Heat of reaction
Heat of solution
Magnetic anisotropy
Magnetic permeability
Melting points
Microporosity
Miscibility
Permeability
Porosity
Resistivity
Solubility
Surface tension
Thermal stability
Vapor pressure
Viscosity

Pickling
Some Fundamental Aspects of Annealing and Pickling Stainless Steels. 1083-1100A
Studies on the Determination of Surface Deuterium in AISI 1062, 4037, and 4140 Steels by Secondary Ion Mass Spectrometry. 3071-3075A

Plasma arc melting
Melting Metal Powder Particles in an Inductively Coupled R.F. Plasma Torch. 213-226B

Plasma arc torches
Melting Metal Powder Particles in an Inductively Coupled R.F. Plasma Torch. 213-226B

Plasma processing
See Plasma arc melting

Plaster of Paris
See Calcium compounds

Plastic deformation
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Plastic deformation, Diffusion effects
Experimental Study of Hydrogen Transport During Plastic Deformation in Iron. 2789-2798A

Plastic deformation, Microstructural effects
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A

Plastic strain
See Plastic deformation

Plasticity
See also Superplasticity
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A

Plasticity, Microstructural effects
Correlations of Microstructure With Dynamic and Quasi-Static Fracture in a Plain Carbon Steel. 2179-2206A

Plastics
See Silicone resins

Plate metal, Mechanical properties
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A

Plating
See Alloy plating
Brass plating
Platinum plating
Pulse plating

Platinizing
See Platinum plating

Platinum, Melting
Acoustic Levitation Technique for Containerless Processing at High Temperatures in Space. 2619-2623A

Platinum, Thermal properties
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Platinum compounds, Phase transformations
Nucleation and Growth in Martensitic Transformations of Ordered Fe_3Pt Alloys. 2931-2936A

Platinum compounds, Thermal properties
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. 1827-1831A

Platinum metal alloys, Thermal properties
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Platinum metal compounds
See Platinum compounds
Ruthenium compounds

Platinum metals
See Palladium
Platinum

Platinum plating
Evaluation of High-Temperature Diffusion Barriers for the Pt—Mo System. 2163-2170A

Plutonium, Binary systems
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Plutonium base alloys, Phase transformations
Thermodynamics and Kinetics of $\delta \rightarrow \alpha$ Martensitic Transformation in Plutonium Alloys. 2705-2711A

Plutonium compounds, Phase transformations
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. 2723-2731A

Polarimeters
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Polariscopes
See Polarimeters

Polarographs
See Polarimeters

Polarography
See Polarimeters

Pole figures
Orientation Mapping. 403-408A

Poling
See Deoxidizing

Pollution abatement
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B

Polymers
See Silicone resins

Pores
See Porosity

Porosity
See also Microporosity
Porosity and Tensile Ductility in Al—Zn Alloys. 517-526A

Porosity, Environmental effects
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A

Porosity, Microstructural effects
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A

Porous materials
See Porous metals

Porous metals, Rolling
Changes in the Longitudinal Flow and Apparent Plastic Poisson's Ratio of a Porous Metal Strip During Hot Densification Rolling. 1205-1211A

Potassium, Binary systems
On the Slopes of Phase Boundaries. 1819-1825A

Potential (electric)
See Electric potential

Powder compacts
See also Sintered compacts

Powder compacts, Mechanical properties
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A

Powder metallurgy
See Mechanical alloying

Powder metallurgy parts, Alloy development
Niobium-Alloyed High Speed Steel by Powder Metallurgy. 1395-1401A

Powder metallurgy parts, Anisotropy
Texture Induced Magnetic Anisotropy in Fe—Nd—B Magnet Prepared via Rapid Solidification and Hot Extrusion Techniques. 3109-3112A

Powder metallurgy parts, Mechanical properties
Microstructure Effects on Tensile Properties of Tungsten—Nickel—Iron Composites. 1523-1532A

Powder technology
See Mechanical alloying

Powdering
Formation of Ultra-Fine Amorphous Powders in Fe—M—B (M = Transition Metal) Systems by Chemical Reduction Method and Their Thermal and Magnetic Properties. 2315-2318A

Powders
See Alloy powders
Metal powders

Precious metal alloys
See Gold base alloys
Platinum metal alloys
Silver base alloys

Precious metal compounds
See Platinum compounds
Ruthenium compounds

Precious metals
See Gold
Palladium
Platinum
Silver

Precipitates
Microstructure and Fracture Toughness of the Aged β-Ti Alloy Ti—10V—2Fe—3Al. 1037-1049A

Precipitates, Crystal growth
Coarsening and Morphology of β' Particles in Fe—Ni—Al—Mo Ferritic Alloys. 1135-1146A

Precipitates, Crystal lattices
Analytical Electron Microscopy of Internally Oxidized Low Si—Al Steel. 953-959A
On the Morphology of the Modulated Precipitation of Extended Multiplets and Fe_9C_4 Epsilon or Eta Carbide Obtained by Aging and Tempering in Fe—C Martensite. 2901-2909A
Structure and Deformation Behavior of T_1 Precipitate Plates in an Al—2Li—1Cu Alloy. 2911-2920A

Precipitation
See also Intergranular precipitation
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Precipitation, Composition effects
The Partitioning of Alloying Elements in Vacuum Arc Remelted, Palladium-Modified PH 13-8 Molybdenum Alloys. 3063-3069A

Precipitation hardening
See also Aging (artificial)
The Aging Characteristics of an Al—2% Li—3% Cu—0.12% Zr Alloy at 190°C. 51-66A
Phase Transformations and Modulated Microstructures in Ti—Al—Nb Alloys. 225-234A
Theoretical Investigation of the Precipitation of δ' in Al—Li. 249-258A
Investigation of Phase Transformation in an Al—0.58 wt.% Fe Alloy by Mössbauer Spectroscopy. 259-264A
Precipitation of the δ-Ni_3Nb Phase in Two Nickel Base Superalloys. 453-465A
Coarsening and Morphology of β' Particles in Fe—Ni—Al—Mo Ferritic Alloys. 1135-1146A
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A
Ti(CN) Precipitation in Microalloyed Austenite During Stress Relaxation. 1415-1424A
Orowan Strengthening by Mo_2C Fibers and Needle Interphase Precipitates in Fe—C—Mo Dual-Phase Steels. 1617-1620A
Spinodal Decomposition of a Co—Ti—Nb Alloy. 1703-1709A
Growth and Coarsening of G.P. Zones in Al—Zn Alloys. 1973-1980A
A New Model for Precipitation at Moving Interphase Boundaries. 2133-2138A

Precipitation hardening, Alloying effects
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A
A Preliminary Study of the Influence of Separate and Combined Aluminum and Nickel Additions on the Properties of a Secondary Hardening Steel. 3103-3107A

Precipitation hardening, Cooling effects
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched and Solid-Quenched Alloys. 2433-2443A

Precipitation hardening, Diffusion effects
Inhibition of Cyclic Grain Boundary Migration Through Cellular Precipitation in Pb—5% Sn Alloy. 2355-2359A

Precipitation hardening, Heating effects
Correlation Among Microstructure, Strength, and Electrical Conductivity of Cu—Ni—Be Alloy. 2279-2285A
On the Morphology of the Modulated Precipitation of Extended Multiplets and Fe_9C_4 Epsilon or Eta Carbide Obtained by Aging and Tempering in Fe—C Martensite. 2901-2909A
Structure and Deformation Behavior of T_1 Precipitate Plates in an Al—2Li—1Cu Alloy. 2911-2920A
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Precipitation hardening, Temperature effects
Application of a New Model to the Interphase Precipitation Reaction in Vanadium Steels. 2139-2151A

Precipitation hardening alloys, Alloy development
Design and Development of an Experimental Wrought Aluminum Alloy for Use at Elevated Temperatures. 1027-1035A

Precipitation hardening alloys, Mechanical properties
On Through Thickness Crystallographic Texture Gradient in Al—Li—Cu—Zr Alloy. 731-732A

Precipitation hardening steels
See also Maraging steels

Precipitation hardening steels, Mechanical properties
The Effect of Microstructure on the Fatigue Crack Growth Behavior of Age-Hardened High Strength Steels in a Corrosive Environment. 1461-1469A

Precipitation hardening steels, Melting
The Partitioning of Alloying Elements in Vacuum Arc Remelted, Palladium-Modified PH 13-8 Molybdenum Alloys. 3063-3069A

Precipitation heat treatment
See also Aging (artificial)
Precipitation hardening
The Precipitation Behavior of a Zr—2.5 wt.% Nb Alloy. 1153-1162A

Preferential attack (corrosion)
See Intergranular corrosion

Press forming
A Wrinkling Index for Press Forming. 2831-2837A

Press working
See Press forming

Pressing
See Hot isostatic pressing
Hot pressing
Press forming

Pressure
See Vacuum
Vapor pressure

Pressure sintering
See Hot pressing

Pressure welding
See Diffusion welding
Projection welding

Pressureless sintering
See Loose powder sintering

Primary displacements
See Displacements (lattice)

Process control
A Simple Fluid Mechanical Model for Planar Flow Casting Melt-Spinning. 571-579B
The Trajectories and Distribution of Particles in a Turbulent Axisymmetric Gas Jet Injected Into a Flash Furnace Shaft. 871-884B
Characterization of Two-Phase Axisymmetric Plume in a Gas Stirred Liquid Bath—a Water Model Study. 885-892B

Projection welding
Consolidation of Metallic Glass Ribbons Using Electric Discharge Welding. 1634-1638A

Propagation
See Crack propagation

Properzi process
See Continuous casting

Protective atmospheres
See Controlled atmospheres

Protective coatings
Evaluation of High-Temperature Diffusion Barriers for the Pt—Mo System. 2163-2170A

Pulsation
See Pulse plating

Pulse echo technique
See Ultrasonic testing

Pulse plating
Pulsed Electrodeposition of Layered Brass Structures. 1569-1573A

Pyrolysis, Heating effects
Phase Transformation During Annealing of Rapidly Solidified Aluminum-Rich Al—Fe—Si Alloys. 2893-2900A

Pyrometallurgy
The Reaction Between Spodumene and Tachyhydrite. 663-668B
Process Mineralogy of Suspended Particles From a Simulated Commercial Flash Smelter. 719-729B
Kinetics of Oxidation of MoS_2 by CaO in the Presence of Water Vapor. 973-975B

Quantitative analysis
See Volumetric analysis

Quantitative metallography
See also Areal analysis
Quantitative Fractography: a Modern Perspective. 961-971A

Quaternary systems, Phases (state of matter)
Solidus and Solvus Isotherms for Quaternary Al—Li—Cu—Mg Alloys. 1631-1634A

A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Quench aging
The Precipitation Behavior of a Zr—2.5 wt.% Nb Alloy. 1153-1162A

Quench hardening
See also Austempering
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A

Quenching (cooling)
See also Quench aging
Quench hardening
Rapid solidification
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched and Solid-Quenched Alloys. 2433-2443A

Quenching stresses
See Residual stress

R H process
See Vacuum degassing

Radiant heating
See Laser beam heating

Radiation
See Electron beams

Radiation damage
Creep Cavity Growth From Tritium-Induced Helium Bubbles in Nickel. 821-827A

Radiocrystallography
See Crystallography

Radiography
See Microradiography

Raney nickel
See Catalysts

Rapid solidification
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A
Thermal Considerations on the Recalescence of Alloy Powders. 687-697A
On the Formation of Dispersoids During Rapid Solidification of an Al—Fe—Ni Alloy. 1101-1107A
Characterization of the Aging Response of a Melt-Spun Al—Be—Li Alloy Ribbon. 1173-1178A
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A
Microstructural Characterization of the Dispersed Phases in Al—Ce—Fe System. 1645-1656A
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A
The Microstructure and Phase Relationships in Rapidly Solidified Type 304 Stainless Steel Powders. 2399-2405A
Effect of Rapid Solidification and Alloying Addition on Lattice Distortion and Atomic Ordering in $L1_0$ TiAl Alloys and Their Ternary Alloys. 2445-2455A
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

Rare earth alloys
See Thulium base alloys

Rare earth metals
See also Cerium

Rare earth metals, Alloying additive
Influence of Rare Earth Metals on the Nucleation and Solidification Behavior of Iron and 1045 Steel. 383-395B

Rare earth metals, Reactions (chemical)
Equilibria Between the Rare Earth Elements, Oxygen and Sulfur, in Molten Iron. 409-418B

Rare gases
See Argon
Helium

Reaction kinetics
Reaction Mechanism for the CaO—Al and CaO—CaF_2 Desulfurization of Carbon-Saturated Iron. 261-268B
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B
Hematite Single Crystal Reduction Into Magnetite With CO—CO_2. 311-317B
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B
Dissolution Kinetics of Argentian Plumbojarosite From Old Tailings of Sulfatizing Roasting Pyrites by HCl—$CaCl_2$ Leaching. 365-373B
Dissolution Kinetics of Particulate Graphite Injected Into Iron/Carbon Melts. 375-382B
On the Solubility of Aluminum in Cryolitic Melts. 449-457B
Analysis of Dissolution Rate of Metal Oxide in Acidic Chloride Solution in Terms of Water Activity. 505-507B
Possible Roles of Upper Slag Phases on the Fluid Dynamics of Gas Stirred Ladles. 507-511B
Discussion of "Physical Chemistry of Gas Liquid Solder Reactions" and Reply. 513-514B
Kinetics of Nonoxidative Leaching of Galena in Perchloric, Hydrobromic, and Hydrochloric Acid Solutions. 541-546B
Studies on Oxychlorination of MoS_2 in a Fluid Bed Reactor. 669-675B
The Effect of Alkali Salt Catalyst on the Carbothermic Reduction of Nickel Oxide. 685-686B
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A
Observations on the Dynamics of Electromagnetically Levitated Liquid Metals and Alloys at Elevated Temperatures. 1939-1943A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A
Precipitation of Guinier—Preston Zones in Aluminum—Magnesium; a Calorimetric Analysis of Liquid-Quenched and Solid-Quenched Alloys. 2433-2443A
Rutherford Backscattering Study of High Temperature Oxidation of Melt-Spun Glassy Fe—22.5Al—10Zr. 2567-2573A

Reactions (chemical)
See also Carbothermic reactions
Chlorination
Deoxidizing
Desulfurizing
Hydrogen reduction
Hydrogenation
Interface reactions
Internal oxidation
Oxidation
Pyrolysis
Silicothermic reactions
Sulfation
Reactivity of Al—2.5% Li Alloy With Water as Studied by the Exploding Wire Technique. 255-259B
Water and Solute Activities of the Solution Systems of H_2SO_4—$CuSO_4$—H_2O and HCl—$CuCl_2$—H_2O. 347-354B
Thermodynamics of Nitrogen in CaO—SiO_2—Al_2O_3 Slags and Its Reaction With Fe—C_{sat} Melts. 419-425B
Conditions Affecting the Formation of Chlorinated Carbon Compounds During Carbochlorination. 477-482B

Reactions (nuclear)
See Particle interactions

Reactivity (chemical)
See Activity (chemical)

Reactor vessels (chemical)
See Chemical reactors

Reactors
See Chemical reactors

Recalescence
Thermal Considerations on the Recalescence of Alloy Powders. 687-697A
Dendritic Growth of Undercooled Nickel—Tin. III. 1109-1119A

Recovering, Composition effects
Reducibility of Laterite Ores. 181-186B

Recrystallization
See also Grain refinement
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A
Effect of Annealing Temperature on Yield Anisotropy of Zircaloy-4 TREX. 1243-1255A
Ostwald Ripening in a System With a High Volume Fraction of Coarsening Phase. 2713-2721A
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Red hardness
See Hardness

Red shortness
See Brittleness

Reduction (chemical)
See also Flash smelting
Hydrogen reduction
Vapor Phase Reduction of Chromic Oxide in an Ar—H_2 RF Plasma. 927-933B
Formation of Ultra-Fine Amorphous Powders in Fe—M—B (M = Transition Metal) Systems by Chemical Reduction Method and Their Thermal and Magnetic Properties. 2315-2318A

Reduction (electrolytic)
See Electrowinning
Hall Heroult process

Reduction (metal working)
See Finish rolling
Hot rolling

Refining
See Electrorefining

Refractories
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B

Refractory alloys
See Chromium base alloys
Molybdenum base alloys
Niobium base alloys
Tungsten base alloys
Vanadium base alloys

Refractory materials
See Refractories

Refractory metal compounds
See Chromium compounds
Molybdenum compounds
Niobium compounds
Tantalum compounds
Tungsten carbide
Vanadium compounds

Refractory metals
See Chromium
Molybdenum
Niobium

Tantalum
Tungsten
Vanadium

Relaxation
See Stress relaxation

Research
See also Technology transfer
An Emerging Role for the National Laboratories in Materials Research. 341-345B
An Emerging Role for the National Laboratories in Materials Research. 1379-1383A

Residual stress, Deformation effects
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Resistance welding
See Projection welding

Resistance welds
See Welded joints

Resistivity
Electrical Conductivity of Acidic Chloride Solutions. 53-58B
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A
Gibbs Free Energy of Formation of Cementite, Fe_3C. 2115-2117A

Resistivity, Composition effects
Correlations of Electrical Conductivity to Slag Composition and Temperature. 133-140B
Electrical Properties of High T_C $EuBa_2Cu_3O_{7-x}$. 738-743A

Resistivity, Heating effects
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Resistivity, Microstructural effects
Correlation Among Microstructure, Strength, and Electrical Conductivity of Cu—Ni—Be Alloy. 2279-2285A

Resonance testing
See Ultrasonic testing

Retained austenite, Alloying effects
Tensile Deformation Behavior of Mechanically Stabilized Fe—Mn Austenite. 1563-1568A

Revaporization
See Vaporizing

Reviews
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A
Coupled Growth Zone in Fe—18Cr—C Alloys. 1367-1369A
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Rheological properties
See Viscosity

Ribbons (metallic)
See Tapes (metallic)

Roasting
See also Fluidized bed roasting
A Dynamic Mathematical Model of the Complete Grate/Kiln Iron-Ore Pellet Induration Process. 103-112B
Gas Flow and Pressure Balancing in Modeling Grate/Kiln Induration. 113-121B
Energy Cost Minimization in Grate/Kiln Induration. 123-132B
A Microscopic Study of the Transformation of Sphalerite Particles During the Roasting of Zinc Concentrate. 141-146B

Rods, Casting
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B

Rolling
See Finish rolling
Hot rolling

Rolling texture
Microscopic Shear Localization in Nickel. 2041-2048A

Rotary kilns
See Kilns

Rotating beam fatigue tests
See Fatigue tests

Rotating machines
See Electric motors

Roughing (rolling)
See Hot rolling

Rupture strength
See Creep rupture strength

Ruthenium compounds, Thermal properties
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A

Rutile, Diffusion
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A

Scale (corrosion), Heating effects
Some Fundamental Aspects of Annealing and Pickling Stainless Steels. 1083-1100A

Scale removal
See Descaling

Scattering
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A

Sea nodules, Reactions (chemical)
Leaching of Manganese Nodule in Ammoniacal Medium Using Ferrous Sulfate as the Reductant. 331-334B
Studies on the Dry Chlorination of Deep Sea Manganese Nodules. 514-518B

Seals (stoppers)
See O ring seals

Season cracking
See Stress corrosion cracking

Secondary displacements
See Displacements (lattice)

Seeding
See Nucleation

Segregations
Grain Boundary Segregation in the Nickel-Base Alloy 182. 137-143A
Grain Boundary Segregation in Austenitic Stainless Steels and Its Effect on Intergranular Corrosion and Stress Corrosion Cracking. 495-504A
Evaluation of the Effects of Segregation on Austenite Grain Boundary Energy in Fe—C—X Alloys. 1807-1818A
Channel Formation in Pb—Sn, Pb—Sb, and Pb—Sn—Sb Alloy Ingots and Comparison With the System NH_4Cl—H_2O. 1861-1871A
Grain Boundary Segregation of Sulfur and Antimony in Iron Alloys. 2005-2011A
Thermodynamics of Segregation in Alloys. 2091-2098A
Surface Segregation in MCrAlY Alloys. 2099-2108A
The Influence of Boron on the Grain Boundary Chemistry and Microstructure of Ni—16Cr—9Fe—0.03C. 2555-2566A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A
Directional Solidification of Lead– Copper Immiscible Alloys in a Cyclic Gravity Environment. 2677-2680A

Segregations, Cooling effects
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A

Segregations, Field effects
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A

Segregations, Heating effects
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A

Segregations, Impurity effects
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Self diffusion
See Diffusion

Semiconductors, Crystal growth
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A

Semicontinuous casting
See Continuous casting

Semikilling
See Deoxidizing

Sensitivity
See Notch sensitivity

Sensitizing, Heating effects
Inhibition of Nitrogen Uptake by SiO_2 Surface Films Formed on Stainless Steel During Annealing in H/N Atmospheres. 3045-3055A

Separation
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B

Settlers (forehearths)
See Holding furnaces

Shaft kilns
See Kilns

Shape
See Particle shape

Shape memory
X-Ray Study of the Premartensitic Phenomena in AuCd. 265-271A
The Effect of Aging on the Fracture Behavior of Cu—Al—Ni β Phase Alloys. 1761-1766A

Shape memory alloys, Mechanical properties
Some Stress—Strain—Temperature Relationships for Shape Memory Alloys. 2407-2413A
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Shear properties
See Shear strength
Shear stress

Shear strength, Alloying effects
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Shear strength, Heating effects
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. 3035-3044A

Shear strength, Microstructural effects
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A

Shear stress
Orientation Dependence of $\beta_1 \rightarrow \beta'_1$ Stress-Induced Martensitic Transformation in a Cu—Al—Ni Alloy. 915-923A

Shear stress, Microstructural effects
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A

Sheet metal, Forming
Effect of Geometrical Defects in Forming Sheet Steel by Biaxial Stretching. 2067-2074A

Sheet metal, Mechanical properties
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A
Effects of Work-Hardening and Rate Sensitivity on the Sheet Tensile Test. 293-300A

Sheet steel
See Strip steel

Shielded arc welding
See also Gas tungsten arc welding
Shielded metal arc welding
Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A
A Model for the Strength of the As-Deposited Regions of Steel Weld Metals. 1597-1602A

Shielded metal arc welding
The Nonuniform Distribution of Inclusions in Low-Alloy Steel Weld Deposits. 669-674A

Short range order
Tweed Structures Associated With FCC—FCT Transformations in Fe—Pd Alloys. 803-810A

Silica
See Silicon dioxide

Silicates, Solubility
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1400°C. 334-336B

Silicides
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Silicides, Deformation effects
Effect of the Thermomechanical Treatments on Size and Distribution of Silicides and Tensile Properties of Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 389-391A

Silicides, Mechanical properties
A15 Compound Deformation and Secondary Slip in V_3Si. 1125-1127A

Silicides, Phase transformations
Low Temperature Electron Microscopy on the Cubic-Tetragonal Transformation of V_3Si. 797-801A

Silicon, Alloying elements
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A
The Effect of Alloying Elements and Microstructure on the Strength and Fracture Resistance of Pearlitic Steel. 2819-2829A

Silicon, Extraction
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Carbothermic Reduction of Silicon Dioxide—a Thermodynamic Investigation. 249-253B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B

Silicon, Ternary systems
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Silicon base alloys, Thin films
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A

Silicon carbide, Composite materials
Modeling of Infiltration Kinetics for Liquid Metal Processing of Composites. 95-101B
Columnar Dendritic Solidification in a Metal-Matrix Composite. 709-721A
Directional Solidification of Al—Ni/SiC Composites During Parabolic Trajectories. 1899-1904A
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. 2847-2855A
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A
A Method of Assessing the Reactivity Between SiC and Molten Aluminum. 3107-3109A

Silicon compounds
See also Silicon carbide
Silicon dioxide

Silicon compounds, Microstructure
Amorphous Cr_5Si_3 Thin Films—Morphology and Kinetics of Crystallization. 1991-2003A

Silicon dioxide, Reduction (chemical)
Carbothermic Reduction of Silicon Dioxide—a Thermodynamic Investigation. 249-253B

Silicon steels
See Electrical steels

Silicone plastics
See Silicone resins

Silicone resins
Containment of a Silicone Fluid Free Surface in Reduced Gravity. 1883-1888A

Silicone resins, Physical properties
Experimental Study of Thermocapillary Flows in a Thin Liquid Layer With Heat Fluxes Imposed on the Free Surface. 1895-1898A

Silicones
See Silicone resins

Silicothermic reactions
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B

Silver, Bonding
A Study of the Transient Liquid Phase Bonding Process Applied to a Ag/Cu/Ag Sandwich Joint. 675-686A

Silver, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

Silver, Recovering
Mineralogical Characterization of Silver Flotation Concentrates Made From Zinc Neutral Leach Residues. 803-817B

Silver, Ternary systems
Phase Stability Relationships and Glass Formation in the System Cu—Ag—In. 13-21A
Experimental and Calculated Ag + Au + Ge Phase Diagram. 409-416A
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Silver base alloys, Microstructure
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A

Silver base alloys, Surface properties
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B

Simulation
See also Computer simulation
Creep Crack Growth Simulation Under Transient Stress Fields. 829-835A
Free Surface Flow and Heat Transfer in Conduction Mode Laser Welding. 851-858B
Eutectic Growth: Selection of Interlamellar Spacings. 2955-2964A
Dendritic Solidification in Binary Alloys. 3087-3096A

Single crystals, Corrosion
Transgranular Stress-Corrosion Cracking of Disordered Cu—25Au in Aqueous Chloride and Sulfate Media. 281-292A

Single crystals, Crystal growth
An Experimental Study on Process Variables in Crystal Growth by Ohno Continuous Casting. 1849-1852A

Single crystals, Mechanical properties
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A

Single crystals, Reduction (chemical)
Hematite Single Crystal Reduction Into Magnetite With CO—CO_2. 311-317B

Sintered compacts
Gravity and Configurational Energy Induced Microstructural Changes in Liquid Phase Sintering. 1905-1913A

Sintered compacts, Mechanical properties
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Sintered compacts, Melting
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A

Sintering (powder metallurgy)
See Liquid phase sintering
Loose powder sintering

Slabs, Casting
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B

Slag fuming
Bubbling at High Flow Rates in Inviscid and Viscous Liquids (Slags). 83-94B

Slags
See also Blast furnace slags
Possible Roles of Upper Slag Phases on the Fluid Dynamics of Gas Stirred Ladles. 507-511B

Slags, Electrical properties
Correlations of Electrical Conductivity to Slag Composition and Temperature. 133-140B

Slags, Reactions (chemical)
Evaluation of the Activity and Molecular Form of Bismuth in Copper Smelting Slags. I. Ternary Silicate Slags. 627-641B
Thermodynamics of Ca—CaF_2 and Ca—$CaCl_2$ Systems for the Dephosphorization of Steel. 643-648B

Slags, Solubility
The Effect of Temperature on Nickel Solubility in Silica Saturated Fayalite Slags From 1523-1623K. 243-247B
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1400°C. 334-336B

Thermodynamics of Nitrogen in $CaO—SiO_2—Al_2O_3$ Slags and Its Reaction With $Fe—C_{sat}$ Melts. 419-425B

Slip
See also Cross slip
Slip planes

Slip, Alloying effects
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Slip planes
Dislocation Structures in the Strain Localized Region in Fatigued 85/15 Brass. 1257-1262A
The Mechanism of Hydrogen Induced Cleavage in Fe—3% Si Alloy. 1335-1343A
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A
A Finite Element Model of a Persistent Slip Band Based Upon Electron Microscopic Evidence. 2457-2465A

Slip planes, Microstructural effects
Slip Observations in 70-30 Alpha Brass. 1575-1581A

Slip planes, Stress effects
Growth of Slip Bands During Fatigue of 6061-T6 Aluminum. 83-91A

Smelting
See also Flash smelting
Saturation of Copper—Iron Mattes With Solid Magnetite. 935-941B

Smelting furnaces
Process Mineralogy of Suspended Particles From a Simulated Commercial Flash Smelter. 719-729B

Sodium, Binary systems
On the Slopes of Phase Boundaries. 1819-1825A

Sodium aluminum fluoride
See Cryolite

Sodium compounds, Solubility
The Sulfur Partition Ratio and the Sulfide Capacity of $Na_2O—SiO_2$ Slags at 1400°C. 334-336B

Soft annealing
See Annealing

Soft solders
See Solders

Softening
See Strain softening

Solder coating
See Alloy plating

Solder plating
See Alloy plating

Solders, Mechanical properties
Isothermal Fatigue of Low Tin Lead Based Solder. 1051-1059A

Solders, Phases (state of matter)
Densities of Pb—Sn Alloys During Solidification. 2349-2354A

Solid phases
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A

Solid solutions
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B
Spinodal Decomposition of a Co—Ti—Nb Alloy. 1703-1709A

Solidification
See also Directional solidification
Rapid solidification
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. I. Theory and Experiments With Cold Models. 581-593B
Columnar Dendritic Solidification in a Metal-Matrix Composite. 709-721A
Some Observations on the Matrix Microstructure of Aluminum—Silicon Alloy—Graphite Particle Composites. 1365-1367A
Meteorites as Specimens for Microgravity Research. 1919-1923A
A Melting and Solidification Study of Alloy 625. 2319-2331A
Acoustic Levitation Technique for Containerless Processing at High Temperatures in Space. 2619-2623A
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A
Enthalpies of a Binary Alloy During Solidification. 3057-3061A
The Partitioning of Alloying Elements in Vacuum Arc Remelted, Palladium-Modified PH 13-8 Molybdenum Alloys. 3063-3069A
Dendritic Solidification in Binary Alloys. 3087-3096A

Solidification, Alloying effects
Influence of Rare Earth Metals on the Nucleation and Solidification Behavior of Iron and 1045 Steel. 383-395B
Thermal Considerations on the Recalescence of Alloy Powders. 687-697A

Solidification, Field effects
Influence of Gravity Level and Interfacial Energies on Dispersion-Forming Tendencies in Hypermonotectic Cu—Pb—Al Alloys. 2645-2650A
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A

Solidus
Eutectic Growth: Selection of Interlamellar Spacings. 2955-2964A

Solubility
Thermodynamics of Nitrogen in $CaO—SiO_2—Al_2O_3$ Slags and Its Reaction With $Fe—C_{sat}$ Melts. 419-425B
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A

Solubility, Composition effects
Solubility and Diffusion of Hydrogen in Vanadium—Oxygen Alloys. 67-72A
On the Solubility of Aluminum Carbide in Cryolitic Melts. 441-447B
On the Solubility of Aluminum in Cryolitic Melts. 449-457B

Solubility, High temperature effects
Nitrogen Solubility in Solid Niobium. 613-616B

Solubility, Temperature effects
The Solubility of Hydrogen in Liquid Binary Al—Li Alloys. 227-232B
The Effect of Temperature on Nickel Solubility in Silica Saturated Fayalite Slags From 1523-1623K. 243-247B

Solution entropy
See Entropy of solution

Solution heat treatment
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Solvents
Thermodynamic Consistency of the Interaction Parameter Formalism. 269-275B

Sorption
See Absorption (material)
Desorption

Space environment
Containment of a Silicone Fluid Free Surface in Reduced Gravity. 1883-1888A
Experimental Study of Thermocapillary Flows in a Thin Liquid Layer With Heat Fluxes Imposed on the Free Surface. 1895-1898A
Directional Solidification of Al—Ni/SiC Composites During Parabolic Trajectories. 1899-1904A
Ground-Based Microgravity Materials Science Research at NASA's Microgravity Materials Science Laboratory. 1915-1917A
Meteorites as Specimens for Microgravity Research. 1919-1923A
The Bubble, Drop, and Particle Unit (BDPU). 1925-1929A
Mixing Fuel Particles for Space Combustion Research Using Acoustics. 1931-1937A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A
Acoustic Levitation Technique for Containerless Processing at High Temperatures in Space. 2619-2623A
Fluid Oscillation in the Drop Tower. 2625-2630A
Making Acceleration Data More Accessible and Useful to Microgravity Investigators. 2631-2637A
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A
Influence of Gravity Level and Interfacial Energies on Dispersion-Forming Tendencies in Hypermonotectic Cu—Pb—Al Alloys. 2645-2650A
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A
Eutectic Structures of Ag—Cu After Melting and Solidification in Microgravity and on Earth. 2659-2664A
The Influence of Interfacial Energies and Gravitational Levels on the Directionally Solidified Structures in Hypermonotectic Alloys. 2665-2669A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A
Directional Solidification of Lead—Copper Immiscible Alloys in a Cyclic Gravity Environment. 2677-2680A
Influence of Microgravity on the Morphology of the Directionally Solidified Front in an AlSi Alloy. 2681-2686A
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A
Melting and Solidification in Microgravity of Sintered Aluminum Powder Alloys. 2695-2703A
Directional Solidification of Cu—Pb and Bi—Ga Monotectic Alloys Under Normal Gravity and During Parabolic Flight. 2839-2846A

Space lattices
See Crystal lattices

Specific density
See Density

Specific gravity
See Density

Specific resistance
See Resistivity

Specific volume
See Density

Specific weight
See Density

Spectroscopy
See Auger electron spectroscopy

Speed
See Velocity

Spelter
See Zinc

Sphalerite, Reduction (chemical)
Measurements of Dielectric Properties for Particulate Sphalerite Samples and Zinc Concentrates. 13-24B
Correlation Between Dielectric Properties and Aqueous Oxidation Rate for Pulverized Sphalerites and Zinc Concentrates. 25-36B
A Microscopic Study of the Transformation of Sphalerite Particles During the Roasting of Zinc Concentrate. 141-146B

Spheroidal iron
See Nodular iron

Spinel
Measurement and Modeling of Alloy—Spinel—Corundum Equilibrium in the Ni—Mn—Al—O System at 1873K. 459-463B

Spinodal decomposition
Spinodal Decomposition of a Co—Ti—Nb Alloy. 1703-1709A

Spinodal decomposition, Heating effects
A Theoretical Analysis of the Spinodal Decomposition in Fe—C Martensite During Aging Stage of Tempering. 2427-2432A

Sponginess
See Porosity

Sputtering
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A

Stability
See also Dimensional stability
Phase stability
Thermal stability
A Method of Assessing the Reactivity Between SiC and Molten Aluminum. 3107-3109A

Stacking fault energy, Alloying effects
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Stainless steels
See also Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels

Stainless steels, Heat treatment
Some Fundamental Aspects of Annealing and Pickling Stainless Steels. 1083-1100A

Stainless steels, Reactions (chemical)
Thermodynamics of Ca—CaF_2 and Ca—$CaCl_2$ Systems for the Dephosphorization of Steel. 643-648B

Stamping
A Wrinkling Index for Press Forming. 2831-2837A

Static fatigue
See Creep rupture strength

Static tests
See Creep tests
Hardness tests

Statistical analysis
Statistical Considerations on Uniform Grain Size. 2937-2944A

Steel alloys
See Alloy steels

Steel constituents
See Austenite
Bainite
Cementite
Ferrite
Martensite
Pearlite
Retained austenite

Steel making
See also Oxygen steel making
Possible Roles of Upper Slag Phases on the Fluid Dynamics of Gas Stirred Ladles. 507-511B
On the Flow Criteria for Suspending Solid Particles in Inductively Stirred Melts. I. Newtonian Behavior. 557-562B
Fluid Dynamics in Bubble Stirred Ladles. I. Experiments. 745-754B
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B
Characterization of Two-Phase Axisymmetric Plume in a Gas Stirred Liquid Bath—a Water Model Study. 885-892B

Steels
See also Alloy steels
Aluminum killed steels
Austenitic stainless steels
Carbon manganese steels
Carbon steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium steels
Die steels
Dual phase steels
Duplex stainless steels
Electrical steels
Ferritic stainless steels
Galvanized steels
High speed tool steels
High strength low alloy steels
High strength steels
Hot work tool steels
Killed steels
Low alloy steels
Manganese steels
Maraging steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel steels
Precipitation hardening steels
Stainless steels
Titanium steels
Vanadium steels

Steels, Casting
The Mathematical Modeling Revolution in Extractive Metallurgy. 525-540B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. I. Theory and Experiments With Cold Models. 581-593B
Flow Fields in Electromagnetic Stirring of Rectangular Strands With Linear Inductors. II. Computation of Flow Fields in Billets, Blooms, and Slabs of Steel. 595-602B

Steels, Coating
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. I. Surface Composition of As-Produced Sheet. 1603-1608A
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. II. Surface Composition of Chromated Sheet. 1609-1616A

Steels, Mechanical properties
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A
Effects of Work-Hardening and Rate Sensitivity on the Sheet Tensile Test. 293-300A

Steels, Microstructure
Grain Shape and Its Influence on the Experimental Measurement of Grain Size. 933-940A

Steels, Phase transformations
The Kinetics of Ferrite Nucleation at Austenite Grain Boundaries in Fe—C Alloys. 427-440A

Steels, Refining
The Calcium—Phosphorus and the Simultaneous Calcium—Oxygen and Calcium—Sulfur Equilibria in Liquid Iron. 617-622B

Steels, Structural hardening
A New Model for Precipitation at Moving Interphase Boundaries. 2133-2138A

Steels, Thermal properties
Convective Heat-Transfer Measurements in Liquid Metals Under Different Fluid Flow Conditions. 859-870B

Stick electrode arc welding
See Shielded metal arc welding

Stirring
See also Electromagnetic stirring
Performance Analysis of the Aluminum Casting Furnace. 171-180B
Possible Roles of Upper Slag Phases on the Fluid Dynamics of Gas Stirred Ladles. 507-511B
Fluid Dynamics in Bubble Stirred Ladles. I. Experiments. 745-754B
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B
Experimental Investigation of Mixing Phenomena in a Gas Stirred Liquid Bath. 839-850B
Characterization of Two-Phase Axisymmetric Plume in a Gas Stirred Liquid Bath—a Water Model Study. 885-892B

Stora Kaldo process
See Oxygen steel making

Strain
See also True strain

Strain, Deformation effects
Biaxial Path Dependence of Deformation Substructure of Type 304 Stainless Steel. 1277-1293A

Strain hardening
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A

Strain hardening, Microstructural effects
Slip Observations in 70-30 Alpha Brass. 1575-1581A
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A

Strain rate
Influence of Time and Temperature Dependent Processes on Strain Controlled Low Cycle Fatigue Behavior of Alloy 617. 359-371A
Test Temperature and Strain Rate Effects on the Properties of a Tungsten Heavy Alloy. 487-494A
Determination of Parameters for Thermally Activated Glide From Stress—Strain Curves at Different Temperatures and Strain Rates. 2975-2978A

Strain rate, Corrosion effects
The Role of Dislocations During Transport of Hydrogen in Hydrogen Embrittlement of Iron. 2799-2803A

Strain softening
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A
The Absence of Steady-State Flow During Large Strain Plastic Deformation of Some FCC Metals at Low and Intermediate Temperatures. 3013-3024A

Stress analysis
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Stress concentration, Deformation effects
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Stress corrosion cracking
Cracking Kinetics of Two-Phase Stainless Steel Alloys in Hydrogen Gas. 145-152A
Transgranular Stress-Corrosion Cracking of Disordered Cu—25Au in Aqueous Chloride and Sulfate Media. 281-292A

Stress corrosion cracking, Alloying effects
Effects of Manganese, Phosphorus and Molybdenum on Sulfide Stress Cracking Resistance of High Strength Low Alloy Steels. 2171-2177A

Stress corrosion cracking, Composition effects
Discussion of "Sulfide Stress Cracking Susceptibility of Nickel Containing Steels" and Authors' Reply. 153A

Stress corrosion cracking, Diffusion effects
Grain Boundary Segregation in Austenitic Stainless Steels and Its Effect on Intergranular Corrosion and Stress Corrosion Cracking. 495-504A

Stress corrosion cracking, Impurity effects
Clean Steels for Steam Turbine Rotors—Their Stress Corrosion Cracking Resistance. 1583-1596A
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A

Stress corrosion cracking, Microstructural effects
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A

Stress corrosion cracking, Welding effects
Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A

Stress corrosion resistance
See Corrosion resistance

Stress distribution
See Stress concentration

Stress intensity
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load in Notched Rupture Tests. 863-871A

Stress relaxation
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A
Ti(CN) Precipitation in Microalloyed Austenite During Stress Relaxation. 1415-1424A
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A

Stress relieving
See Grain refinement

Stress rupture strength
See Creep rupture strength

Stress strain curves
Investigation of Panel Crack Formation in Steel Ingots. I. Mathematical Analysis and Mid-Face Panel Cracks. 277-287B
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
The Influence of Mo_2C Morphology and Distribution on the Fatigue Crack Initiation and Propagation Behavior of Fe—C—Mo Dual-Phase Steels. 973-986A
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A
The Flow Equation and Its Necking Criterion in Austenitic Cryogenic Fe—Mn—Al—X Steels. 1625-1626A
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A
Some Stress—Strain—Temperature Relationships for Shape Memory Alloys. 2407-2413A
The Mechanical Properties of the Superplastic Al—33Cu Eutectic Alloy. 2487-2496A

Stress strain curves, Temperature effects
Determination of Parameters for Thermally Activated Glide From Stress—Strain Curves at Different Temperatures and Strain Rates. 2975-2978A

Stresses
See Residual stress
Shear stress
Stress intensity
Thermal stresses

Stretch forming
Effect of Geometrical Defects in Forming Sheet Steel by Biaxial Stretching. 2067-2074A

Stretching
See Stretch forming

Strip
See Strip steel

Strip steel, Casting
Processing Effects in Spray Casting of Steel Strip. 3077-3086A

Strip steel, Metal working
A Wrinkling Index for Press Forming. 2831-2837A

Strontium, Binary systems
On the Slopes of Phase Boundaries. 1819-1825A

Structural hardening
See also Aging (artificial)
Precipitation hardening
Quench hardening
Strain hardening
Surface hardening
Microstructure and Fracture Toughness of the Aged β-Ti Alloy Ti—10V—2Fe—3Al. 1037-1049A

Structure (atomic)
See Atomic structure

Structures (crystalline)
See Banded structure
Columnar structure
Crystal structure
Dendritic structure
Equiaxed structure
Grain structure
Intergranular structure
Lamellar structure
Microstructure
Unit cell
Widmanstatten structure

Submerged arc welds
See Welded joints

Suction
See Vacuum

Sulfates, Environment
Transgranular Stress-Corrosion Cracking of Disordered Cu—25Au in Aqueous Chloride and Sulfate Media. 281-292A

Sulfates, Solubility
Water and Solute Activities of the Solution Systems of H_2SO_4—$CuSO_4$—H_2O and HCl—$CuCl_2$—H_2O. 347-354B

Sulfation
Dissolution Kinetics of Argentian Plumbojarosite From Old Tailings of Sulfatizing Roasting Pyrites by HCl—$CaCl_2$ Leaching. 365-373B

Sulfidation (corrosion)
See Sulfurization

Sulfides, Reactions (chemical)
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B

Sulfides, Solubility
Study by SEM-EDS of the In Situ Dynamic Leaching of Mercury Ores. 165-170B
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1400°C. 334-336B

Sulfidizing (not diffusion)
Kinetics of Manganous Oxide Sulfidization in Carbonyl Sulfide (COS) Contaminated Atmospheres. 303-310B

Sulfur
Grain Boundary Segregation of Sulfur and Antimony in Iron Alloys. 2005-2011A

Sulfur, Alloying elements
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B

Sulfur, Binary systems
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Sulfur, Diffusion
The Sulfur Partition Ratio and the Sulfide Capacity of Na_2O—SiO_2 Slags at 1400°C. 334-336B

Sulfur, Dopants
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B
Surface Segregation in MCrAlY Alloys. 2099-2108A

Sulfur, Impurities
Influence of Austenitizing Temperature on Stress Corrosion in 4330M Steel—the Role of Impurity Segregation in Stress Corrosion Cracking of High Strength Steel. 2225-2231A
The Nucleation of High Temperature Brittle Intergranular Fracture in 2.25Cr—1Mo Steel. 3005-3011A

Sulfur, Recovering
Direct Electrowinning of Lead From Suspension Galena Concentrate Anode in Different Electrolytes. 59-65B

Sulfur, Trace elements
The Effects of Austenitization Temperature on the High Temperature Ductility of Fe—P—S Alloys. 887-892A

Sulfurization, Composition effects
Discussion of "Sulfide Stress Cracking Susceptibility of Nickel Containing Steels" and Authors' Reply. 153A

Sulphur
See Sulfur

Superalloys, Casting
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A

Superalloys, Cladding
Microstructure of Laser Clad Ni—Cr—Al—Hf Alloy on a γ' Strengthened Nickel-Base Superalloy. 1981-1990A

Superalloys, Corrosion
Fatigue Oxidation Interaction in IN 100 Superalloy. 2259-2268A

Superalloys, Directional solidification
Study of Solidification Features of Nickel-Base Superalloys in Relation With Composition. 2333-2340A
Study of Microporosity Formation in Nickel-Base Superalloys. 2341-2348A
Dendritic Solidification of Alloys in Low Gravity. 2671-2676A

Superalloys, Heat treatment
Effect of Single Aging on Stress Corrosion Cracking Susceptibility of Inconel X-750 Under PWR Conditions. 1295-1304A

Superalloys, Mechanical properties
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A
Crack Initiation and Near-Threshold Surface Fatigue Crack Propagation Behavior of the Iron-Base Superalloy A-286. 301-308A
Influence of Time and Temperature Dependent Processes on Strain Controlled Low Cycle Fatigue Behavior of Alloy 617. 359-371A
Creep—Fatigue Behavior of Directionally Solidified and Single Crystal Intermetallic $Ni_3Al(B,Hf)$ at an Intermediate Temperature. 479-486A
Elevated Temperature Creep—Fatigue Crack Propagation in Nickel-Base Alloys and 1Cr—Mo—V Steel. 855-862A
Application of the dc Potential Drop Technique in Investigating Crack Initiation and Propagation Under Sustained Load in Notched Rupture Tests. 863-871A
Influence of Cyclic to Mean Load Ratio on Creep/Fatigue Crack Growth. 873-880A
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Superalloys, Microstructure
Discussion of "Microdistribution of Cerium in Steel" and Author's Reply. 723A
Assessment of Service Induced Microstructural Damage and Its Rejuvenation in Turbine Blades. 2049-2066A
Inelastic Deformation and Dislocation Structure of a Nickel Alloy: Effects of Deformation and Thermal Histories. 2477-2486A
The Influence of Boron on the Grain Boundary Chemistry and Microstructure of Ni—16Cr—9Fe—0.03C. 2555-2566A
Dislocation Network Formation and Coherency Loss Around Gamma-Prime Precipitates in a Nickel-Base Superalloy. 2965-2973A

Superalloys, Phase transformations
A Melting and Solidification Study of Alloy 625. 2319-2331A

Superalloys, Phases (state of matter)
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A

Superalloys, Physical properties
Hydrogen Permeation Through Coated and Uncoated Waspaloy. 1187-1192A
The Wetting Characteristics and Surface Tension of Some Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia Substrates. 1833-1839A

Superalloys, Structural hardening
Precipitation of the δ-Ni_3Nb Phase in Two Nickel Base Superalloys. 453-465A

Superalloys, Welding
An Analytical Electron Microscope Investigation of the Phase Transformations in a Simulated Heat-Affected Zone in Alloy 800. 35-50A
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. 2305-2313A

Superconductors, Crystal growth
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A

Superconductors, Electrical properties
Electrical Properties of High T_C $EuBa_2Cu_3O_{7-x}$. 738-743A

Superconductors, Magnetic properties
Magnetic Properties of Rare Earth—Barium—Copper Oxides in the Normal and Superconducting States. 734-738A

Superconductors, Powder technology
Densification of Oxide Superconductors by Hot Isostatic Pressing. 1841-1847A

Supercooling
Dendritic Growth of Undercooled Nickel—Tin. III. 1109-1119A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A
Eutectic Growth: Selection of Interlamellar Spacings. 2955-2964A
Dendritic Solidification in Binary Alloys. 3087-3096A

Superplasticity
The Mechanical Properties of the Superplastic Al—33Cu Eutectic Alloy. 2487-2496A

Superplasticity, Impurity effects
Superplastic Deformation Behavior in Commercial and High Purity Zn—22% Al. 2741-2752A

Superplasticity, Microstructural effects
A Topological Study of Superplastic Deformation in an Al—Li Alloy With a Bimodal Grain Size Distribution. 1621-1624A

Surface analysis (chemical)
Scanning Auger Microprobe Study of Hot-Dipped Regular-Spangle Galvanized Steel. I. Surface Composition of As-Produced Sheet. 1603-1608A

Surface defects
A Computer Simulation on Tensile Strength of Surface-Damaged Fibers. 1499-1506A
A Wrinkling Index for Press Forming. 2831-2837A

Surface diffusion
See Diffusion

Surface energy, Composition effects
Influence of Gravity Level and Interfacial Energies on Dispersion-Forming Tendencies in Hypermonotectic Cu—Pb—Al Alloys. 2645-2650A
The Influence of Interfacial Energies and Gravitational Levels on the Directionally Solidified Structures in Hypermonotectic Alloys. 2665-2669A

Surface finishing
See Descaling

Surface hardening
See also Laser beam hardening
Acoustic Emission Studies of Electron Beam Surface Modification of Aluminum. 493-503B

Surface hardening, Alloying effects
Laser Transformation Hardening of Iron—Carbon and Iron—Carbon—Chromium Steels. 2013-2025A

Surface hardening, Heating effects
Fatigue Strength Improvement of Age-Hardened 18Ni Maraging Steel by Stress-Laser Surface Treatment of Subsequent Aging. 2603-2606A

Surface properties
See Emissivity
Surface structure
Surface tension

Surface structure
Study by SEM-EDS of the In Situ Dynamic Leaching of Mercury Ores. 165-170B

Surface structure, Alloying effects
Fatigue Damage Accumulation in Nickel Modified by Ion Beam Surface Microalloying. 2775-2788A

Surface structure, Radiation effects
Laser Melting of T1-High Speed Tool Steel. 377-382A

Surface tension
The Wetting Characteristics and Surface Tension of Some Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia Substrates. 1833-1839A
Containment of a Silicone Fluid Free Surface in Reduced Gravity. 1883-1888A

Surface tension, Composition effects
Surface Tension of Binary Metal—Surface Active Solute Systems Under Conditions Relevant to Welding Metallurgy. 483-491B

Surface tension, Heating effects
Determination of Dihedral Angle Distributions in Polycrystals: Application to $\alpha + \beta$ Brass. 1147-1151A

Susceptibility (magnetic)
See Magnetic permeability

Suspensions
See Dispersions

Synthetic resins
See Silicone resins

Systems (metallurgical)
See Binary systems
Quaternary systems
Ternary systems

Tailings, Reactions (chemical)
Dissolution Kinetics of Argentian Plumbojarosite From Old Tailings of Sulfatizing Roasting Pyrites by HCl—$CaCl_2$ Leaching. 365-373B

Tantalum, Alloying elements
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Tantalum compounds, Reactions (chemical)
Dissolution of Columbite and Tantalite in Acidic Fluoride Media. 355-363B

Tapes (metallic), Mechanical properties
Ductile Al—Cu—V Amorphous Alloys Without Metalloid. 391-393A

Tapes (metallic), Microstructure
On the Formation of Dispersoids During Rapid Solidification of an Al—Fe—Ni Alloy. 1101-1107A

Tapes (metallic), Phase transformations
Beta-Eutectoid Decomposition in Rapidly Solidified Titanium—Nickel Alloys. 23-33A

Technology transfer
An Emerging Role for the National Laboratories in Materials Research. 341-345B
An Emerging Role for the National Laboratories in Materials Research. 1379-1383A

Temper brittleness, Impurity effects
Clean Steels for Steam Turbine Rotors—Their Stress Corrosion Cracking Resistance. 1583-1596A

Temperature
See Critical temperature
Curie temperature
Glass transition temperature
High temperature
Melting points
Temperature distribution

Temperature distribution
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A

Temperature distribution, Welding effects
Free Surface Flow and Heat Transfer in Conduction Mode Laser Welding. 851-858B
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B

Temperature field
See Temperature distribution

Temperature measuring instruments, Design
Measurement of Temperature and Emissivity of Specularly Reflecting Glowing Bodies. 1889-1894A

Tempering
Analysis of Nonisothermal Transformation Kinetics; Tempering of Iron—Carbon and Iron—Nitrogen Martensites. 925-932A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A
The Tempering of Iron—Carbon Martensite; Dilatometric and *Calorimetric Analysis.* *2415-2426A*
A Theoretical Analysis of the Spinodal Decomposition in Fe—C Martensite During Aging Stage of Tempering. 2427-2432A
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. *3035-3044A*

Tenacity
See Tensile strength

Tensile modulus
See Modulus of elasticity

Tensile properties
See also Elongation
Tensile strength
Yield point
Yield strength
Design and Development of an Experimental Wrought Aluminum Alloy for Use at Elevated Temperatures. 1027-1035A
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A

Tensile properties, Diffusion effects
Effect of Cathodic Charging on the Mechanical Properties of Aluminum. 2299-2304A

Tensile properties, Heating effects
The Effect of Austenitizing Temperature on the Fracture Initiation Toughness of As-Quenched HP9-4-20 Steel. 2989-3003A
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Tensile properties, Microstructural effects
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
The Law of Mixtures Applied to the Plastic Deformation of Two-Phase Alloys of Coarse Microstructures. 2027-2040A
The Effect of Grain Size on the Bulk Formability and Tensile Properties of Austenitic Stainless Steel Types 304 and 316. 2287-2298A
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A
Effect of Microstructure on Plane-Strain Fracture Toughness of AISI 4340 Steel. 2513-2521A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Tensile shear strength
See Shear strength

Tensile strength, Alloying effects
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A

Tensile strength, Composition effects
Structure and Mechanical Properties of Unidirectionally Solidified Fe—Cr—C and Fe—Cr—X—C Alloys. 1235-1241A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A

Tensile strength, Cooling effects
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A

Tensile strength, Deformation effects
Effect of the Thermomechanical Treatments on Size and Distribution of Silicides and Tensile Properties of Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 389-391A
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A

Tensile strength, Diffusion effects
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A

Tensile strength, Environmental effects
Tensile and Impact Properties Changes of Hastelloy X After Exposure in High-Temperature Helium Environment. 1269-1275A

Tensile strength, Heating effects
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. 3035-3044A

Tensile strength, Microstructural effects
The Strength of Ni_3Al Containing Titanium and Boron. 732-733A
A Computer Simulation on Tensile Strength of Metal Matrix Composites Reinforced With Surface-Damaged Fibers. 1491-1497A
A Computer Simulation on Tensile Strength of Surface-Damaged Fibers. 1499-1506A
Microstructure Effects on Tensile Properties of Tungsten—Nickel—Iron Composites. 1523-1532A
Tensile Deformation Behavior of Mechanically Stabilized Fe—Mn Austenite. 1563-1568A
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A
Preparation and Properties of Fine Grain β-CuAlNi Strain-Memory Alloys. 2921-2929A

Tensile strength, Temperature effects
The Effect of Triaxial Stress Field on Intermediate Temperature Embrittlement of Ferritic Spheroidal Graphite Cast Irons. 1213-1219A
The Flow Equation and Its Necking Criterion in Austenitic Cryogenic Fe—Mn—Al—X Steels. 1625-1626A

Tensile tests
See Tension tests

Tensile yield strength
See Yield strength

Tension
See Surface tension

Tension tests
Effects of Work-Hardening and Rate Sensitivity on the Sheet Tensile Test. 293-300A
Void Formation During Tensile Testing of Dual Phase Steels. 579-589A
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
The Effect of Tin, Aluminum, and Nitrogen on the Hot Ductility of a Carbon—Manganese Steel Between 700-1200°C. 1305-1309A

Ternary systems
The Influence of the Ternary Interaction Parameter ϵ_{Bi}^{Bi} on the Activity of Bismuth in Molten Copper. 427-432B

Ternary systems, Phases (state of matter)
Phase Stability Relationships and Glass Formation in the System Cu—Ag—In. 13-21A
Experimental and Calculated Ag + Au + Ge Phase Diagram. 409-416A
A Thermodynamic Evaluation of the Fe—Cr—C System. 627-636A
Phase Relationships in the Fe—Cr—Ni System at Solidification Temperatures. 899-908A
An Experimental Study and a Thermodynamic Evaluation of the Fe—Cr—Mo System. 1385-1394A
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Ternary systems, Thermal properties
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—Sn Ternary Liquid Alloys; Experimental Determinations and Application of the Hoch—Arpshofen Model. 2075-2089A

Tertiary displacements
See Displacements (lattice)

Testing equipment, Design
Ground-Based Microgravity Materials Science Research at NASA's Microgravity Materials Science Laboratory. 1915-1917A
The Bubble, Drop, and Particle Unit (BDPU). 1925-1929A
Mixing Fuel Particles for Space Combustion Research Using Acoustics. 1931-1937A
Isothermal Dendritic Growth—a Proposed Microgravity Experiment. 1945-1953A

Texture
See also Rolling texture
Modeling of the Plastic Anisotropy of Textured Sheet. 105-120A
On Through Thickness Crystallographic Texture Gradient in Al—Li—Cu—Zr Alloy. 731-732A
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A
Effect of Annealing Temperature on Yield Anisotropy of Zircaloy-4 TREX. 1243-1255A
Effect of Melt Spinning on Grain Size and Texture in Ni—Mo Alloys. 1711-1720A
Intercrystalline Structure Distribution in Polycrystalline Materials. 2611A

Texture, Alloying effects
Creep Crack Growth Behavior of Two Al—Li Alloys. 847-854A

Thallium, Alloying elements
Symmetry Aspects of Pretransformation Behavior in Metallic Alloys. 159-167A
Neutron Scattering Studies of Premartensitic Indium—Thallium Alloys. 193-198A
Premartensitic Anelasticity in Indium—Thallium Alloys. 789-792A

Thermal decomposition
See Pyrolysis

Thermal diffusion, Alloying effects
Change in Direction of Carbon Thermotransport in Nb—V System With Alloying. 1429-1435A

Thermal flux
See Heat transmission

Thermal properties
See Emissivity
Heat of activation
Heat of formation
Heat of mixing
Heat of reaction
Heat of solution
Melting points
Thermal stability
Vapor pressure

Thermal reduction
See Flash smelting

Thermal stability
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B
Modeling Tensile Deformation of Dual-Phase Steel. 1263-1268A

Thermal stresses
Initial Development of Thermal and Stress Fields in Continuously Cast Steel Billets. 2589-2602A

Thermodynamics
Carbothermic Reduction of Silicon Dioxide—a Thermodynamic Investigation. 249-253B
Thermodynamic Consistency of the Interaction Parameter Formalism. 269-275B
Thermodynamics of Nitrogen in $CaO—SiO_2—Al_2O_3$ Slags *and Its Reaction With Fe—C_{sat} Melts.* 419-425B
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B
Mass Spectrometric Study of the Activities of the Fe—Ge System at 1550°C. 511-513B
Thermodynamics for Arsenic and Antimony in Copper Matte Converting—Computer Simulation. 547-556B

Evaluation of the Activity and Molecular Form of Bismuth in Copper Smelting Slags. I. Ternary Silicate Slags. 627-641B
Thermodynamics of Molten Li—Sn Alloys. 637-644A
Thermodynamics of Ca—CaF_2 and Ca—$CaCl_2$ Systems for the Dephosphorization of Steel. 643-648B
Thermodynamics of the Cr—Mn System Using an Isopiestic Technique. 649-654B
Thermodynamic Activity of Na_2O in Na_2O—CaO—SiO_2, Na_2O—MgO—SiO_2, and Na_2O—CaO—SiO_2—Al_2O_3 Melts *at 1400°C.* 655-661B
Thermodynamics of Segregation in Alloys. 2091-2098A
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A
Behavior of Ceramic Particles at the Solid/Liquid Metal Interface in Metal Matrix Composites. 2847-2855A
A Method of Assessing the Reactivity Between SiC and Molten Aluminum. 3107-3109A

Thermoelastic properties
See also Internal friction
Shape memory
Some Stress—Strain—Temperature Relationships for Shape Memory Alloys. 2407-2413A

Thermomechanical properties
See Thermoelastic properties

Thermomechanical treatment
Effect of the Thermomechanical Treatments on Size and Distribution of *Silicides and Tensile Properties of Alloy Ti*—6Al—5Zr—0.5Mo—0.25Si. 389-391A
Modeling of Thermomechanical Processing of Heat-*Treatable Aluminum Alloys.* 617-625A
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A

Thermostability
See Thermal stability

Thickness measurements
Rutherford Backscattering Study of High Temperature Oxi*dation of Melt-Spun Glassy Fe—22.5Al—10Zr.* 2567-2573A

Thin films, Casting
A Simple Fluid Mechanical Model for Planar Flow Casting *Melt-Spinning.* 571-579B

Thin films, Crystal growth
A Proposal for Epitaxial Thin Film Growth in Outer Space. 2639-2643A

Thin films, Phase transformations
Radiation Induced Crystallization of Amorphous Si:H Alloy. 1345-1349A

Thinners
See Solvents

Thulium base alloys, Phase transformations
Nonlinear and Nonlocal Continuum Model of Transformation Precursors in Martensites. 761-775A

Tig arc welding
See Gas tungsten arc welding

Tilting furnaces
See Converters

Tin, Alloying elements
Dendritic Growth of Undercooled Nickel—Tin. III. 1109-1119A

Tin, Binary systems
Densities of Pb—Sn Alloys During Solidification. 2349-2354A
Enthalpies of a Binary Alloy During Solidification. 3057-3061A
The Cata- or Metatectic Reaction—Occurrence and Microstructural Development. 3097-3100A

Tin, Crystal growth
An Experimental Study on Process Variables in Crystal *Growth by Ohno Continuous Casting.* 1849-1852A

Tin, Ternary systems
Enthalpies of Formation of the Ag—Au—Si, Ag—Au—Ge, and Ag—Au—*Sn Ternary Liquid Alloys; Experimental De*terminations and Application of the Hoch—Arpshofen Model. 2075-2089A

Tin base alloys, Composite materials
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A

Tin base alloys, Crystal growth
Bulk Undercooling, Nucleation, and Macrosegregation of Pb—Sn Alloys. 2651-2658A
Ostwald Ripening in a System With a High Volume Fraction of Coarsening Phase. 2713-2721A

Tin base alloys, Directional solidification
Gravitational Macrosegregation in Unidirectionally Solidified Lead—Tin Alloy. 2687-2694A

Tin base alloys, Reactions (chemical)
Discussion of "Physical Chemistry of Gas Liquid Solder Reactions" and Reply. 513-514B

Tin base alloys, Thermal properties
Thermodynamics of Molten Li—Sn Alloys. 637-644A

Tin compounds, Crystal growth
Determination of Standard Free Energies of Formation of Ca_3P_2 and Ca_2Sn at High Temperatures. 433-439B

Tin compounds, Mechanical properties
The Elastic Modulus and Flow Stress of Nb_3Sn *at Elevated* Temperatures. 1127-1128A

Tin nickel alloy plating
See Alloy plating

Titanium, Alloying elements
Discussion of "The Role of Boron in the Grain Refinement of *Aluminum With Titanium" and Authors' Reply.* 385-387A
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A

Titanium, Binary systems
Formation of Amorphous and Metastable Extended Solid Solutions in Cu—Ti Alloys Using the Triode Sputtering Technique. 5-12A
Calculation of the Titanium—Aluminum Phase Diagram. 243-247A
The Stable and Metastable Ti—Nb Phase Diagrams. 2389-2397A

Titanium, Diffusion
Literature Survey on Diffusivities of Oxygen, Aluminum, and *Vanadium in Alpha Titanium, Beta Titanium, and in Rutile.* 1121-1125A

Titanium, Powder technology
Densification of Titanium Powder During Hot Isostatic Pressing. 1767-1773A

Titanium, Sorption
Kinetics of Hydrogen Absorption in Alpha Titanium. 1425-1427A

Titanium, Ternary systems
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A

Titanium base alloys, Crystal lattices
Effect of Rapid Solidification and Alloying Addition on Lattice *Distortion and Atomic Ordering in* $L1_0$ *TiAl Alloys and Their* Ternary Alloys. 2445-2455A

Titanium base alloys, Heat treatment
Observations on Void Nucleation and Growth in α/β *Ti—Mn* Alloys. 1311-1317A

Titanium base alloys, Mechanical properties
*Effect of the Thermomechanical Treatments on Size and Dis*tribution of Silicides and Tensile Properties of Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 389-391A
Effects of Oxygen and Heat Treatment on the Mechanical Properties of Alpha and Beta Titanium Alloys. 527-542A
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A
Microstructure and Fracture Toughness of the Aged β-Ti *Alloy Ti—10V—2Fe—3Al.* 1037-1049A
The Effect of Matrix Strength on the Fracture Resistance of an Alpha—Beta Titanium Alloy, Corona-5. 2503-2512A

Titanium base alloys, Microstructure
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A

Titanium base alloys, Phase transformations
Beta-Eutectoid Decomposition in Rapidly Solidified Titanium—Nickel Alloys. 23-33A
Simple Models for the Omega Phase Transformation. 169-175A
Phase Transformations and Modulated Microstructures in Ti—Al—Nb Alloys. 225-234A
Modulated Lattice Relaxation in β-Based Premartensitic Phase. 777-781A

Titanium base alloys, Phases (state of matter)
The Competition Between Martensite and Omega in Quenched Ti—Nb Alloys. 1677-1686A
The Competition Between the Alpha and Omega Phases in Aged Ti—Nb Alloys. 1687-1694A

Titanium base alloys, Structural hardening
Structure and Properties of a Near-α Titanium Alloy After β Solution Treatment and Aging at 625°C. 3025-3033A

Titanium base alloys, Thermal properties
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Titanium compounds
See also Titanium dioxide

Titanium compounds, Thermal properties
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. 1827-1831A

Titanium dioxide, Reactions (chemical)
Conditions Affecting the Formation of Chlorinated Carbon Compounds During Carbochlorination. 477-482B

Titanium ores
See Rutile

Titanium steels, Structural hardening
A Stress Relaxation Method for Following Carbonitride Precipitation in Austenite at Hot Working Temperatures. 1403-1413A
Ti(CN) Precipitation in Microalloyed Austenite During Stress *Relaxation.* 1415-1424A

Titration
See Volumetric analysis

Tool steels
See Die steels
High speed tool steels
Hot work tool steels

Tools
See Cutting tools

Topography, Welding effects
Free Surface Flow and Heat Transfer in Conduction Mode *Laser Welding.* 851-858B

Torches
See Plasma arc torches

Torsional strength
See Shear strength

Toughness
See also Fracture toughness
Application of a New Model to the Interphase Precipitation Reaction in Vanadium Steels. 2139-2151A

Toughness, Microstructural effects
Tensile Fracture of Coarse-Grained Cast Austenitic Manganese Steels. 2269-2277A

Transferring
See Heat transfer
Mass transfer

Transformations (materials)
See Martensitic transformations
Phase transformations

Transformer steels
See Electrical steels

Transgranular fracture
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A

Transition metal alloys
See Cadmium base alloys
Chromium base alloys
Cobalt base alloys
Copper base alloys
Ferrous alloys
Gold base alloys
Hafnium base alloys
Manganese base alloys
Molybdenum base alloys
Nickel base alloys
Niobium base alloys
Platinum metal alloys
Silver base alloys
Titanium base alloys
Tungsten base alloys
Vanadium base alloys
Zinc base alloys
Zirconium base alloys

Transition metal compounds
See also Chromium compounds
Copper compounds
Hafnium compounds
Iron compounds
Iron oxides
Manganese compounds
Mercury compounds
Molybdenum compounds
Nickel compounds
Niobium compounds
Platinum compounds
Ruthenium compounds
Tantalum compounds
Titanium compounds
Titanium dioxide
Tungsten carbide
Vanadium compounds
Zinc compounds
Zirconium compounds

Transition metal compounds, Phase transformations
Quasi-One-Dimensional Model of Pretransitional Soft Mode Behavior. 811-818A

Transition metals
See also Chromium
Cobalt
Copper
Gold
Hafnium
Iron
Manganese
Mercury (metal)
Molybdenum
Nickel
Niobium
Palladium
Platinum
Silver
Tantalum
Titanium
Tungsten
Vanadium
Yttrium
Zinc
Zirconium

Transition metals, Alloying elements
Formation of Metal—Metal Type Aluminum-Based Amorphous Alloys. 1369-1371A

Transmission
See Heat transmission

Transmission electron microscopy
Tweed Structures Associated With FCC—FCT Transformations in Fe—Pd Alloys. 803-810A

Transuranium metal alloys
See Plutonium base alloys

Transuranium metal compounds
See Plutonium compounds

Transuranium metals
See Plutonium

True strain, Alloying effects
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A

TTT curves
The Effect of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718. 1657-1666A
Correction to "The Effects of Varying Aluminum, Titanium, and Niobium Content on the Phase Stability of Inconel 718". 1657-1666A

Tubes, Mechanical properties
Characterization of Residual Stresses in Bent Incoloy-800 Tubing by Neutron Diffraction. 2207-2214A

Tubular goods
See Tubes

Tungsten, Alloying elements
Activity of Carbon in Nickel-Rich Ni—Mo and Ni—W Alloys. 645-650A

Tungsten, Quaternary systems
A Thermodynamic Evaluation of the C—Cr—Fe—W System. 2547-2554A

Tungsten, Ternary systems
An Experimental Study and a Thermodynamic Evaluation of the Cr—Fe—W System. 2531-2546A

Tungsten arc welding
See Gas tungsten arc welding

Tungsten base alloys, Mechanical properties
Test Temperature and Strain Rate Effects on the Properties of a Tungsten Heavy Alloy. 487-494A
Microstructure Effects on Tensile Properties of Tungsten—Nickel—Iron Composites. 1523-1532A

Tungsten base alloys, Powder technology
Gravity and Configurational Energy Induced Microstructural Changes in Liquid Phase Sintering. 1905-1913A
Sintering Atmosphere Effects on Tensile Properties of Heavy Alloys. 2467-2476A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Tungsten carbide, Coatings
Coating of Graphite Fibers With Tungsten Carbide Using Solid and Liquid Copper as a Transfer Medium. 2109-2113A

Tungsten compounds
See Tungsten carbide

Turbine blades, Casting
A Melting and Solidification Study of Alloy 625. 2319-2331A
Study of Solidification Features of Nickel-Base Superalloys in Relation With Composition. 2333-2340A
Study of Microporosity Formation in Nickel-Base Superalloys. 2341-2348A

Turbine blades, Microstructure
Assessment of Service Induced Microstructural Damage and Its Rejuvenation in Turbine Blades. 2049-2066A

Turbine disks, Corrosion
Clean Steels for Steam Turbine Rotors—Their Stress Corrosion Cracking Resistance. 1583-1596A

Turbines
See Gas turbines

Turbulence
Experimental Measurement and Numerical Computation of Velocity and Turbulence Parameters in a Heated Liquid Metal System. 765-775B

Twinning
Low Temperature Electron Microscopy on the Cubic-Tetragonal Transformation of V_3Si. 797-801A
Electron Microscope Study on Martensitic Transformations in Fe—Pt Alloys: General Features of Internal Structure. 2723-2731A

Ultimate shear strength
See Shear strength

Ultimate tensile strength
See Tensile strength

Ultrasonic testing
Correlation of Mechanical Properties With Nondestructive Evaluation of Babbitt Metal/Bronze Composite Interface. 2215-2224A
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A

Undercoatings, Materials selection
Evaluation of High-Temperature Diffusion Barriers for the Pt—Mo System. 2163-2170A

Undercooling
See Supercooling

Unit cell, Cooling effects
Effect of Melt Spinning on the Microstructure and Mechanical Properties of Three Nickel-Base Superalloys. 93-103A

Uranium, Mechanical properties
Elastic Properties of β-Uranium and the Martensitic α'-Phase in Uranium—Gallium Alloys. 909-913A

Uranium base alloys, Mechanical properties
Elastic Properties of β-Uranium and the Martensitic α'-Phase in Uranium—Gallium Alloys. 909-913A

Vacuum, Environment
Fatigue Crack Propagation Behavior of Titanium Alloys 6242S and 5621S at Elevated Temperature. 881-885A
Investigation of Microstructural Changes in a Ferritic Steel Caused by High Temperature Fatigue. 999-1007A

Vacuum arc melting
The Partitioning of Alloying Elements in Vacuum Arc Remelted, Palladium-Modified PH 13-8 Molybdenum Alloys. 3063-3069A

Vacuum degassing
Use of Ion Scattering in Characterizing the Surface Oxide of P/M Aluminum Alloy 7091. 1372-1374A

Vacuum melting
See Vacuum arc melting

Vanadium, Alloying elements
The Prediction of Precipitation Strengthening in Microalloyed Steels. 1471-1480A
An Approach to Developing an Alternative Hot Work Die Steel. 1751-1760A

Vanadium, Diffusion
Literature Survey on Diffusivities of Oxygen, Aluminum, and Vanadium in Alpha Titanium, Beta Titanium, and in Rutile. 1121-1125A

Vanadium, Solubility
Solubility and Diffusion of Hydrogen in Vanadium—Oxygen Alloys. 67-72A

Vanadium base alloys, Diffusion
Change in Direction of Carbon Thermotransport in Nb—V System With Alloying. 1429-1435A

Vanadium base alloys, Thermal properties
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Vanadium compounds, Mechanical properties
A15 Compound Deformation and Secondary Slip in V_3Si. 1125-1127A

Vanadium compounds, Phase transformations
Low Temperature Electron Microscopy on the Cubic-Tetragonal Transformation of V_3Si. 797-801A

Vanadium steels
See also Chromium molybdenum vanadium steels

Vanadium steels, Structural hardening
Application of a New Model to the Interphase Precipitation Reaction in Vanadium Steels. 2139-2151A

Vapor pressure
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A

Vaporizing, Welding effects
Effects of Oxygen and Sulfur on Alloying Element Vaporization Rates During Laser Welding. 967-972B

Vapors
See Water vapor

Velocity
Experimental Measurement and Numerical Computation of Velocity and Turbulence Parameters in a Heated Liquid Metal System. 765-775B

Vickers hardness
See Diamond pyramid hardness

Viscosity
Fluid Oscillation in the Drop Tower. 2625-2630A

Voids
Void Formation During Tensile Testing of Dual Phase Steels. 579-589A
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A
Observations on Void Nucleation and Growth in α/β Ti—Mn Alloys. 1311-1317A

Volatilizing
See Vaporizing

Voltage
See Electric potential

Voltage drop
See Electric potential

Volumetric analysis
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Wastes
See Tailings

Water
Thermal Explosions Resulting From Fuel—Coolant Interactions: Analysis of Single Bubble Hydrodynamics. 563-570B

Water, Environment
Corrosion Fatigue Crack Initiation in a Mode II Notch Specimen. 1067-1073A

Water, Reactions (chemical)
Reactivity of Al—2.5% Li Alloy With Water as Studied by the Exploding Wire Technique. 255-259B

Water, Solubility
Water and Solute Activities of the Solution Systems of H_2SO_4—$CuSO_4$—H_2O and HCl—$CuCl_2$—H_2O. 347-354B

Water vapor, Environment
Chemical and Metallurgical Aspects of Environmentally Assisted Fatigue Crack Growth in 7075-T651 Aluminum Alloy. 1739-1750A
The Role of Hydrogen in Corrosion Fatigue of High Purity Al—Zn—Mg Exposed to Water Vapor. 1775-1783A

Wear
See also Hot gas corrosion
Fluid Dynamics in Bubble Stirred Ladles. II. Mathematical Modeling. 755-764B
Wear-Enhanced Hydrogen Evolution From Mild Steel. 1721-1726A

Weld defects
An Analytical Electron Microscope Investigation of the Phase Transformations in a Simulated Heat-Affected Zone in Alloy 800. 35-50A
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A

Weld metal, Mechanical properties
A Model for the Strength of the As-Deposited Regions of Steel Weld Metals. 1597-1602A

Weld metal, Microstructure
The Nonuniform Distribution of Inclusions in Low-Alloy Steel Weld Deposits. 669-674A
Welding Parameters and the Grain Structure of Weld Metal—a Thermodynamic Consideration. 1075-1082A

Weldability
An Analytical Electron Microscope Investigation of the Phase Transformations in a Simulated Heat-Affected Zone in Alloy 800. 35-50A
On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, 5456, and 5086. 319-329B
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A
Design and Development of an Experimental Wrought Aluminum Alloy for Use at Elevated Temperatures. 1027-1035A

Welded joints, Corrosion
Environmental Cracking of Type 316 Austenitic Stainless Steel Weldments in High Temperature CO_2 Gas. 1445-1460A

Welded joints, Mechanical properties
On the Weldability, Composition, and Hardness of Pulsed and Continuous Nd:YAG Laser Welds in Aluminum Alloys 6061, 5456, and 5086. 319-329B
A Model for the Strength of the As-Deposited Regions of Steel Weld Metals. 1597-1602A
The Kinetics of Intergranular Oxygen Penetration in Nickel and Its Relevance to Weldment Cracking. 2305-2313A

Welded joints, Microstructure
A Study of the Weldability and Weld Related Microstructure of Cabot Alloy 214. 657-667A

Welding
See Arc welding
Diffusion welding
Gas tungsten arc welding
Laser beam welding
Projection welding
Shielded arc welding
Shielded metal arc welding

Welding parameters
Welding Parameters and the Grain Structure of Weld Metal—a Thermodynamic Consideration. 1075-1082A

Welds
See Welded joints

Wetting
The Wetting Characteristics and Surface Tension of Some Nickel-Based Alloys on Yttria, Hafnia, Alumina, and Zirconia Substrates. 1833-1839A
Fluid Oscillation in the Drop Tower. 2625-2630A

Whisker composites, Nondestructive testing
Correlation of Mechanical and Ultrasonic Properties of Al—SiC Metal-Matrix Composite. 2233-2246A

Whisker composites, Structural hardening
Effects of SiC Whiskers and Particles on Precipitation in Aluminum Matrix Composites. 2945-2953A

Whiskers (metals)
Materials for Advanced Studies and Devices. 155-164B
Materials for Advanced Studies and Devices. 749-758A
The Nucleation of Iron on Dense Wustite: a Morphological Study. 787-802B

White iron, Phase transformations
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. I. Experiments. 1955-1963A
Competitive Growth of Stable and Metastable Fe—C—X Eutectics. II. Mechanisms. 1965-1971A

Widmanstatten structure
Meteorites as Specimens for Microgravity Research. 1919-1923A
The Effect of Matrix Strength on the Fracture Resistance of an Alpha—Beta Titanium Alloy, Corona-5. 2503-2512A

Wire bar
See Billets

Wolfram
See Tungsten

Work hardening
See Strain hardening

Work softening
See Strain softening

Work strengthening
See Strain hardening

Workability
See Formability

Wustite
Effect of Temperature on Magnetizing Reduction of Agbaja Iron Ore. 731-735B

The Nucleation of Iron on Dense Wustite: a Morphological Study. 787-802B

X ray analysis
See X ray diffraction

X ray diffraction
X-Ray and Neutron Diffraction Anomalies Preceding Martensitic Phase Transformation in $AuCuZn_2$ Alloys. 793-796A

X ray diffractometer
See X ray diffraction

X ray micrographs
See Microradiography

Yield point, Microstructural effects
Elastic Interaction Stresses. I. The Influence of Bicrystal Size on Stresses in [213] Iso-Axial 70-30 Alpha-Brass Bicrystals. 1727-1737A

Yield strain
See Strain

Yield strength
The Effect of Matrix Strength on Void Nucleation and Growth in an Alpha—Beta Titanium Alloy, Corona-5. 591-601A
The Effect of Matrix Strength on Void Nucleation and Growth in a Widmanstätten Alpha—Beta Titanium Alloy, Corona-5. 1163-1171A
Effects of Thermomechanical Processing on the Microstructure and Mechanical Properties of a Ti—V—N Steel. 1221-1234A
Application of a New Model to the Interphase Precipitation Reaction in Vanadium Steels. 2139-2151A
Yield Stress as Determined From Hardness Measurements for Mechanically Alloyed Aluminum Base Alloys. 2363-2366A

Yield strength, Alloying effects
Aluminum—Lithium Powder Metallurgy Alloys With Improved Toughness. 603-615A
Effects of Cobalt Concentration on the Relative Resistance to Octahedral and Cube Slip in Nickel-Base Superalloys. 2733-2739A

Yield strength, Composition effects
High Temperature Strength and Ductility of Recrystallized Ni_3Al—Ni_3Mn Alloys. 345-352A
Effects of Oxygen and Heat Treatment on the Mechanical Properties of Alpha and Beta Titanium Alloys. 527-542A

Yield strength, Deformation effects
Effect of the Thermomechanical Treatments on Size and Distribution of Silicides and Tensile Properties of Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 389-391A

Yield strength, Diffusion effects
Hydrogen Effects in [001] Oriented Nickel-Base Superalloy Single Crystals. 73-82A

Yield strength, Heating effects
Development of High Toughness in Austempered Type Ductile Cast Iron and Evaluation of Its Properties. 319-327A
The Effects of Heat Treatment and Cold Working on the Room-Temperature and Cryogenic Mechanical Properties of Fe—30Mn—9Al—0.9C Steel. 1873-1876A
Correlation Among Microstructure, Strength, and Electrical Conductivity of Cu—Ni—Be Alloy. 2279-2285A
Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference. 3035-3044A

Yield strength, High temperature effects
The Elastic Modulus and Flow Stress of Nb_3Sn at Elevated Temperatures. 1127-1128A
The Effect of Tempering Temperature on Near-Threshold Fatigue Crack Behavior in Quenched and Tempered 4140 Steel. 2497-2502A

Yield strength, Microstructural effects
An Analysis for the Effect of a Grain Size Gradient on Torsional and Tensile Properties. 329-335A
On Through Thickness Crystallographic Texture Gradient in Al—Li—Cu—Zr Alloy. 731-732A
Crack Growth From Internal Hydrogen—Temperature and Microstructural Effects in 4340 Steel. 1319-1334A
Slip Observations in 70-30 Alpha Brass. 1575-1581A
Microstructure—Property Relationship in a 2XXX Aluminum Alloy With Magnesium Addition. 2523-2530A
Microstructural Refinement of W—Ni—Fe Heavy Alloys by Alloying Additions. 3100-3103A

Yield stress
See Yield strength

Youngs modulus
See Modulus of elasticity

Yttrium, Diffusion
Thermodynamics of Segregation in Alloys. 2091-2098A

Yttrium, Dopants
Surface Segregation in MCrAlY Alloys. 2099-2108A

Zinc, Alloying elements
Growth and Coarsening of G.P. Zones in Al—Zn Alloys. 1973-1980A

Zinc, Beneficiation
Mineralogical Characterization of Silver Flotation Concentrates Made From Zinc Neutral Leach Residues. 803-817B

Zinc, Casting
Influence of Mold Length and Mold Heat Transfer on Horizontal Continuous Casting of Nonferrous Alloy Rods. 201-212B

Zinc, Coating
Pulsed Electrodeposition of Layered Brass Structures. 1569-1573A

Zinc, Diffusion
Effect of High Pressure on Interdiffusion in Cu—Zn Alloys at Temperatures Near the Melting Point. 467-471A

Zinc, Extraction
Determination of the Diffusion Coefficients of $CuSO_4$, $ZnSO_4$, and $NiSO_4$ in Aqueous Solution. 5-12B
Measurements of Dielectric Properties for Particulate Sphalerite Samples and Zinc Concentrates. 13-24B
Correlation Between Dielectric Properties and Aqueous Oxidation Rate for Pulverized Sphalerites and Zinc Concentrates. 25-36B
An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate. 73-81B
A Microscopic Study of the Transformation of Sphalerite Particles During the Roasting of Zinc Concentrate. 141-146B
The Behavior of Thiourea and Flotation Reagents in Zinc Electrowinning Circuits. 187-199B
Correction to "An Intrinsic-Transport Model for Solid—Solid Reactions Involving a Gaseous Intermediate". 519B
The Evidence for a Miscibility Gap in the Fe_3O_4—$ZnFe_2O_4$ System—a Review. 919-925B

Zinc, Impurities
The Effects of Mg^{2+}, Mn^{2+}, Zn^{2+}, and Al^{3+} on the Nickel Deposit During Electrowinning From Sulfate Bath. 823-830B

Zinc, Microstructure
Grain Shape and Its Influence on the Experimental Measurement of Grain Size. 933-940A
Structure of a Small Angle Tilt Grain Boundary in Zinc. 2359-2363A
Statistical Considerations on Uniform Grain Size. 2937-2944A

Zinc, Reactions (chemical)
Speciation and Reduction Potentials of Metal Ions in Concentrated Chloride and Sulfate Solutions Relevant to Processing Base Metal Sulfides. 37-45B

Zinc, Recovering
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B

Zinc base alloys, Mechanical properties
Porosity and Tensile Ductility in Al—Zn Alloys. 517-526A
Superplastic Deformation Behavior in Commercial and High Purity Zn—22% Al. 2741-2752A

Zinc base alloys, Phase transformations
X-Ray and Neutron Diffraction Anomalies Preceding Martensitic Phase Transformation in $AuCuZn_2$ Alloys. 793-796A

Zinc base alloys, Reactions (chemical)
The Reaction Between Solid Iron and Liquid Al—Zn Baths. 1193-1203A

Zinc compounds
The Mechanism of Ferrite Formation From Iron Sulfides During Zinc Roasting. 777-785B

Zinc ores
See Sphalerite

Zinc plating
See Hot dip galvanizing

Zirconium, Ternary systems
Solidification Structures in Rapidly Quenched Cu—Ti—Zr Alloys. 1853-1860A

Zirconium base alloys, Corrosion
The Influence of Hydride Size and Matrix Strength on Fracture Initiation at Hydrides in Zirconium Alloys. 1507-1522A
Determination of Fracture Initiation in Hydride Blisters Using Acoustic Emission. 2247-2257A

Zirconium base alloys, Heat treatment
The Precipitation Behavior of a Zr—2.5 wt.% Nb Alloy. 1153-1162A
Effect of Annealing Temperature on Yield Anisotropy of Zircaloy-4 TREX. 1243-1255A

Zirconium base alloys, Mechanical properties
Modeling the Texture Dependence of Environmentally Assisted Growth of Long and Short Cracks. 1009-1020A

Zirconium base alloys, Phase transformations
Simple Models for the Omega Phase Transformation. 169-175A

Zirconium base alloys, Powder technology
Mechanical Alloying of Brittle Materials. 2867-2874A

Zirconium base alloys, Thermal properties
The Generalized Lewis Acid-Base Titration of Palladium and Niobium. 893-917B

Zirconium compounds, Reactions (chemical)
Conditions Affecting the Formation of Chlorinated Carbon Compounds During Carbochlorination. 477-482B

Zirconium compounds, Thermal properties
Thermochemistry of the Intermetallic Compounds RuTi, RuZr, and RuHf. 1061-1066A
Standard Enthalpies of Formation of PtTi, PtZr, and PtHf. 1827-1831A